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Final Response to BDAT Related Comments Document General BDAT Issues. Volume 1-A-3

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This response to comments document only addresses those comments which were submitted on the proposed land disposal restrictions for those waste codes and general BDAT technologies and issues which relate to Third Third Wastes Treatment Standards.

The commenters presented in this document are grouped according to major concerns of the commenters.

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FINAL
RESPONSE TO BDAT RELATED COMMENTS DOCUMENT

General BDAT Issues

VOLUME I-A-3

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May 1990

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INTRODUCTION

This response to comments document only addresses those comments which were submitted on the proposed land disposal restrictions for those waste codes and general BDAT technologies and issues which relate to Third Third Wastes Treatment Standards.

The commenters presented in this document are grouped according to major concerns of the commenters. This document is comprised of the following sections:

ISSUE CODE 1: General BDAT Aspects
ISSUE CODE 2: D001 - Characteristic Ignitable Wastes
ISSUE CODE 3: D002 - Characteristic Corrosive Wastes
ISSUE CODE 4: D003 - Characteristic Reactive Wastes and P and U Wastes Containing Reactive Listing Constituents
ISSUE CODE 5: D004/D010 - Characteristic Wastes for Arsenic and Selenium and K, P, and U Wastes Containing Arsenic and Selenium
ISSUE CODE 6: D005 - Characteristic Wastes for Barium and P013
ISSUE CODE 7: D006 - Characteristic Wastes for Cadmium
ISSUE CODE 8: D007 - Characteristic Wastes for Chromium
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ISSUE CODE 12: D011 - Characteristic Wastes for Silver
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ISSUE CODE 25: K015 - Still Bottoms from Benzal Chloride

ISSUE CODE 26: K021 - Spent Antimony Catalyst.

(No Comments Were Received for this Waste Code)

ISSUE CODE 27: K046 - WW Treatment Sludges from Manufacturing, Formulating, and Loading of Lead-Based Initiating Compounds

ISSUE CODE 28: K060 - Ammonia Still Lime Sludge.

(No Comments Were Received for this Waste Code)

ISSUE CODE 29: K061 - Electric Arc Furnace Dust

ISSUE CODE 30: K069 - Emission Control Dust/Sludge from Secondary Lead Smelting

ISSUE CODE 31: K071, K106 - Mercury Cell Process Wastes

ISSUE CODE 32: K073 - Chlorinated Hydrocarbon Wastes.

(No Comments Were Received for this Waste Code)

ISSUE CODE 33: K086 - Residues from Ink Formulation

ISSUE CODE 34: K100 - Waste Leaching Solution from Acid Leaching of Emission Control Dust/Sludge from Secondary Lead Smelting

(No Comments Were Received for this Waste Code)

ISSUE CODE 35: Wastes Containing Cyanide

ISSUE CODE 36: K017 - Wastes from the production of Epichlorohydrin

(No Comments Were Received for this Waste Code)

ISSUE CODE 37: K028, K029, K095, K096 - Production of 1,1,1-Trichloroethane

ISSUE CODE 38: Wastewaters containing BDAT Constituents

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(No Comments Were Received for this Waste Code)

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(No Comments Were Received for this Waste Code)

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(No Comments Were Received for this Waste Code)

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Commenters are identified by both commenter number and commenter name. Comments within each section of this document have been assigned a sequential comment number.

Issues were obtained from the original comment submittal and were categorized based on the grouping specified above. The Agency's response to each comment follows immediately after the text of the document. For responses related to capacity issues, the reader should review the "Response to Comments Background Document for the Third Third Land Disposal Restrictions Proposed Rule, November 22, 1989. Volume II Capacity Related Comments." For information regarding broad policy questions, the reader is directed to the "Response to Comments Background Document for the Third Third Land Disposal Restrictions Proposed Rule, November 22, 1989. Volume III Policy Related Comments."

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No Comments Were Received for this Waste Code

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No Comments Were Received for this Waste Code

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Comment Number: 1-H-13
Docket Number: LD12-00172
Commenter: Hazardous Waste Treatment Council
Issue: General BDAT Aspects
Subissue: Soil and Debris
Comment:

1. Debris Wastes

Certain types of debris materials such as discarded processing equipment and other contaminated materials that are generated from handling and cleanup of waste spills, cannot be stabilized by existing commercially available treatment technology to comply with the proposed EPA BDAT land disposal standards for TCLP leachable metals in characteristic wastes.

Debris may be defined as any material that neither can pass into nor through the normal primary, secondary or tertiary treatment steps because of its physical size and/or properties. Municipal wastewater treatment plants typically remove unwanted, damaging debris with bar screens, grit chambers, and similar devices. This type of material consists of wood, metal, glass, plastic, stone, sand and other rigid objects that cannot be pumped, mixed or otherwise conveyed through the system.

At least 50 percent of the contaminated debris are metal objects from processing equipment and products. Other frequently encountered objects are structural materials such as concrete, bricks, wood, glass and plastic. Cloth and fibrous materials such as discarded filter cloths, cartridges, gloves and protective wear are found in cleanup debris rolloff boxes. Materials similar to the above of various sizes, are also found in drums inter-mixed with sludges, salts and solutions.

Comment Number: 1- H-13 continued
Docket Number: LD12-00172
Commenter: Hazardous Waste Treatment Council
Issue: General BDAT Aspects
Subissue: Soil and Debris
Comment:

In the case of waste mixed with debris, the decontamination proceeds by dissolving the soluble salts in process tanks. The solids, including salts and debris, are dissolved and treated.

In other cases, maintenance cleanup operations at chemical or manufacturing facilities, as well as abandoned site cleanup operations by federal and state agencies, generate debris contaminated with metal constituents. These constituents can be removed at a degree by repeated washings, but there is a limited extent to which these metal constituents can be removed, either because of absorption effects, on the debris or because the debris is comprised of metallic parts or scrap metal, which as part of the pure original substrate, leach metals in excess of BDAT standards.

Following decontamination of these debris materials, the metallic substrates and precipitated metals incorporated in and adsorbed on concrete, stone, wood, plastic and fabric materials can leach levels of metals that are higher than the land disposal BDAT standards for characteristic waste codes. These debris materials are not compatible with processing by available metal stabilization technology. Some specific examples are as following:

Comment Number: 1-H·13 continued
Docket Number: LD12-00172
Commenter: Hazardous Waste Treatment Council
Issue: General BDAT Aspects
Subissue: Soil and Debris
Comment:

a. Metal Objects, Structures And Scraps

A large percentage of the weight of total debris material is metallic pieces and objects that can leach metals directly from the substrate and/or surface platings when subjected to TCLP tests. Typical examples of these materials are:

- Length of metal pipe, tubing, fittings, and hangers
- Bolts, nuts, washers and fasteners
- Cut-up tanks, drums and other scraps
- Cut-up salt pots
- Discarded and disassembled duct work and hoods
- Incinerator refractory, that contain metal elements (i.e., chromium oxide bricks)
- Discarded tools, machinery parts, wire, cable, conduit, chain and strapping
- Discarded off-spec product and fragments of metal products, parts and electrodes

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Comment Number: 1-H-13 continued
Docket Number: LD12-00172
Commenter: Hazardous Waste Treatment Council
Issue: General BDAT Aspects
Subissue: Soil and Debris
Comment:

b. Rigid Porous Objects

Major cleanup operations as well as general maintenance at industrial facilities generate a wide range and sizes of discarded contaminated structural and natural materials. These materials, because of their porous rigid structures, absorb contaminating materials such as cyanide and metals salts and solutions. Proper disposal of these materials requires decontamination of surface and inner porous areas as much as possible, by soaking, washing, flushing, draining and rinsing techniques. Following decontamination concentrations of metals exceeding stabilization treatment standards can be leached from absorbed metal precipitates by TCLP tests. Typical examples of these materials are:

- Broken concrete slabs and structures
- Concrete and cinder blocks, and various kinds of brick
- Wood in various sizes, shapes and configurations
- Stones, rocks, pebbles, and grit
- Rigid insulation materials

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Docket Number: LD12-00172
Commenter: Hazardous Waste Treatment Council
Issue: General BDAT Aspects
Subissue: Soil and Debris
Comment:

c. Rigid Non-Porous Materials

Various rigid, non-porous materials are also a significant fraction of typical debris. These materials can directly adsorb metals onto their surfaces during their useful life and retain these metals during decontamination treatment. However TCLP test conditions can desorb these metals giving rise to concentrations in the leachate samples in excess of the standards developed for F006 non-wastewater residues. Typical examples of these materials are:

- Pieces of plastic drums, tanks, liners and sheets
- Plastic piping, tubing, hose, duct and fittings
- Glass, slate, tile and ceramics
- Discarded plastic lab ware, empty bottles and containers

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Docket Number: LD12-00172
Commenter: Hazardous Waste Treatment Council
Issue: General BDAT Aspects
Subissue: Soil and Debris
Comment:

d. Fibrous Absorbent Materials

Non-pumpable, non-mixable material and scraps associated with the processing, handling, and cleanup of cyanide and metal salts and solutions are received in rolloff boxes and drum receipts inter-mixed with other types of waste and debris. These materials can be decontaminated for cyanide and soluble metal salt contamination but can still retain precipitated and adsorbed metal concentrations within their structures. Extensive washings are not effective at desorbing these metals. As in other cases with debris containing adsorbed and precipitated metals, TCLP tests show levels of metal can leach from samples of these decontaminated materials in excess of the non-wastewater land disposal standards developed for F006 and K062 wastes. Examples of these materials are:

- Discarded cartridge filter elements
- Filter cloths and similar fabrics
- Cloth, rags and paper products
- Rope, cord, and other braided fiber products

Comment Number: 1-H-13 continued
Docket Number: LD12-00172
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Comment:

e. Floor Sweepings

Floor sweepings from areas contaminated with metallic salts are usually cleaned up last and added to a waste debris on top of all the other described debris so that it often covers and clings to the surfaces of other debris during shipment, storage, handling and processing of the contaminated debris. These sweepings contain small amounts of all the above described materials in addition to soils, dust, and sweeping compounds and associated salt and solution contamination. Typical examples of these materials are:

- Dry absorbent sweeping products
- Saw dust
- Small quantities of soils, clay and grit

These five groups of described debris materials are received for treatment in generally heterogeneous mixtures and also intermingled with waste salts, solutions and sludges requiring primary chemical treatments. The most practical method of isolating them from the chemical wastes undergoing chemical treatment is to physically separate them by their size, density and insolubility. The resulting debris has to be managed for disposal as an intermingled conglomeration of materials.

Comment Number: 1-H-13 continued
Docket Number: LD12-00172
Commenter: Hazardous Waste Treatment Council
Issue: General BDAT Aspects
Subissue: Soil and Debris
Comment:

The HWTC believes that in establishing BDAT standards, EPA considered only the chemically precipitated non-wastewater treatment residues such as sludges and filter cakes in addition to fine soils, clays and loams. These chemical precipitation products are discharged as a result of the chemical treatment reactions and are slurried and processed by stabilization technology. On the other hand, debris materials having the characteristics described above are not generated by the waste treatment process reactions. For this reason, we believe they were neither considered nor evaluated by EPA in establishing BDAT for non-wastewater treatment residue with respect to TCLP leachable metal standards for land disposal. In EPA's proposed "Best Demonstrated Technology (BDAT) background documents for F006, K062, K071, and D004/D010, the subject of debris treatment is not mentioned. Laboratory evaluations of "known" off-the-shelf debris type materials show that TCLP leachability from the debris is primarily due to the metallic composition of the debris. These materials can therefore leach metals at concentrations in excess of the non-wastewater BDAT treatment standards even after all the contaminating hazardous wastes have been removed.

Comment Number: 1- H·13 continued
Docket Number: LD12 -00172
Commenter: Hazardous Waste Treatment Council
Issue: General BDAT Aspects
Subissue: Soil and Debris
Comment:

For debris waste, a few of our member companies, for example CyanoKEM, have submitted data to the Third Thirds docket. This data, as well as other data submitted by HWTC members in the past can be used in setting BDAT standards specific for debris waste. The HWTC supports the rescheduling of scrap metal debris shown on page 48469 of the proposed rule to the third thirds, and we urge EPA to complete the development work on debris waste metal BDAT standards based on data provided by our members, or extend the variance until appropriate standards are available.

Comment Number: 1 - H-13 continued
Docket Number: LD 12 -00172
Commenter: Hazardous Waste Treatment Council
Issue: General BDAT Aspects
Subissue: Soil and Debris
Comment:

XIV. DEBRIS DEFINITION

The HWTC disagrees with the definition provided for debris on page 48489 of the third-thirds proposed rule. Buried whole drums should not be considered debris, contrary to the statement in the preamble to this proposed rule. The HWTC has provided detailed comments to the recently proposed rule on "Applicability of Land Disposal Restrictions to CERCLA Response Actions" - 54 Federal Register 41566-41569. In these comments the HWTC provides more appropriate definitions for debris, and urges EPA to adopt these definitions. Partially buried drums must not be considered debris, as these containers may hold substantial quantities of highly toxic waste materials that are amenable to treatment to BDAT standards prior to land disposal.

Comment Number: 1-H-13
Docket Number: LD12-00172
Commenter: The HWTC
Issue: General BDAT Aspects
Subissue: Soil & Debris
Response:

This is a thoughtful and helpful comment. EPA took it into account in processing the recent Allied debris variance and in developing an inorganic debris subcategory in this rule.

Soil and debris that are contaminated with prohibited wastes are subject to the land disposal restrictions and must meet the treatment standard for the contaminating waste prior to land disposal. The Agency realizes, however, that there are certain problems associated with regulating hazardous wastes in soil and debris matrices. Because of such problems, the Agency is preparing a separate rulemaking that will establish treatability groups and treatment standards for contaminated soil and debris. Until soil and debris can be better organized into treatability groups, promulgated treatment standards apply. If the contaminated soil and debris cannot be treated to meet the promulgated treatment standards, alternative treatment standards can be established under a site-specific variance from the treatment standards.

In order to be granted a site-specific variance from the treatment standard, the petitioner must demonstrate to the Agency that because the physical (or chemical) properties of the waste differs significantly from the waste analyzed in developing the treatment standard, the waste cannot be treated to specified levels or by the specified methods.

The Agency wants to point out that for metal wastes that are generated as an organo-metallic or in an organic matrix, including "organic debris" (rags, paper, cardboard, clothes, gloves, paints, paint chips, wood, grubbing materials, blankets, hoses, bags, resins, and PVC piping), the Agency has determined that they can be incinerated to destroy the organo-metallic bond or the organic matrix containing the metal, prior to subsequent treatment of the ash, in order to comply with a concentration-based standard or prior to application of the technology-based metal treatment standard. This does not preclude the washing or extraction of metals from an "organic debris" that is only a characteristic waste due to surface contamination.

Additionally, inorganics such as slags, glass, concrete, bricks, and other inorganic solid debris have been defined by the Agency as the "nonfriable inorganic solids"

Comment Number: 1-H-13
Docket Number: LD12-00172
Commenter: The HWTC
Issue: General BDAT Aspects
Subissue: Soil & Debris
Response: (Continuation)

treatability group. These as the inorganic solids that are incapable of passing through a 9.5 mm standard sieve that require crushing, grinding, or cutting in mechanical sizing equipment prior to stabilization, limited to the following inorganic or metal materials: 1) metal slags, 2) glassified slag, 3) glass, 4) concrete (excluding cementitious or pozzolanic stabilized hazardous wastes), 5) masonry and refractory bricks, 6) metal cans, containers, drums, or tanks; 7) metal nuts, bolts, pipes, pumps, valves, appliances, or industrial equipment, and 8) "scrap metal" according to 40 CFR 261.1(c)(6). For this treatability group, the Agency has determined a two year national capacity variance and the standards for D004 through D011 wastes do not apply to "inorganic solids debris".

The Agency is in then process of developing a separate rulemaking to address contaminated soil and debris. That is expected in 1992. The definition of debris will likely be refined based on data gathered as part of that rulemaking effort. The Agency was able to develop definitions of organic debris and inorganic solids debris within the time constraints of promulgating the Third Third rule, however, further refinement of the definition of debris was not possible at this time.

Comment Number: ~~LD8~~ 1-H-14
Docket Number: LD12-00190
Commenter: Union Carbide Chemicals + Plastics Company
Issue: General BDAT Aspects
Subissue: Soil and Debris
Comment:

4) Soil and Debris--UCC supports the two year national capacity variance for soil and debris; however, UCC strongly urges the Agency to deal with the problems associated with LDR's for soil and debris. As it stands now, the BDAT standards of the original wastes carry through to contaminated soil and debris that contain low parts per million of the original listed organic or hazardous constituent. Thus, in many cases, this soil and debris that has low level contamination must be incinerated to meet BDAT standards.

It is UCC's position that separate BDAT standards be established by the Agency for soil and debris and that these standards take into account specific waste characteristics and matrix affects. At a minimum the Agency must implement an interim solution to deal with the soil and debris variances that will expire in August and November of 1990.

UCC encourages the Agency to consider CMA's deminimis petition, with reasonable deminimis levels based on sound scientific data. This would allow soil and debris that is contaminated with low levels of the listed constituents to be exempt from LDR requirements while still being protective of human health and the environment. Such a provision would also eliminate unnecessary delays in CERCLA clean-up and RCRA corrective action activities.

Comment Number: 1-H-14
Docket Number: LD12-00190
Commenter: Union Carbide
Issue: General BDAT Aspects
Subissue: Soil & Debris
Response:

Soil and debris that are contaminated with prohibited wastes are subject to the land disposal restrictions and must meet the treatment standard for the contaminating waste prior to land disposal. The Agency realizes, however, that there are certain problems associated with regulating hazardous wastes in soil and debris matrices. Because of such problems, the Agency is preparing a separate rulemaking that will establish treatability groups and treatment standards for contaminated soil and debris. Until soil and debris can be better organized into treatability groups, promulgated treatment standards apply. If the contaminated soil and debris cannot be treated to meet the promulgated treatment standards, alternative treatment standards can be established under a site-specific variance from the treatment standards.

In order to be granted a site-specific variance from the treatment standard, the petitioner must demonstrate to the Agency that because the physical (or chemical) properties of the waste differs significantly from the waste analyzed in developing the treatment standard, the waste cannot be treated to specified levels or by the specified methods.

Comment Number: 1-H-15
Docket Number: LD12-00223
Commenter: Chemical Processors Inc.
Issue: General BDAT Aspects
Subissue: Soil and Debris
Comment:

4. **Section III.A.8. "Clarification of Applicability of Treatment Standards to Soil and Debris"**

EPA admits the problem of what to do with soil and debris contaminated with EP Toxic metals. For these soil and debris wastes, the EPA is proposing to require site specific variances or the treatment standards for the original waste. This is presupposing that the EPA has the capability to process and accept the amount of variance applications it will receive. Stabilization as a treatment method for soil and debris is unproven. Without a quick means for a variance to the treatment standards, the proposed rule would bottleneck soil and debris wastes from being disposed, with increased risk to human health and environment.

Comment Number: 1-H-15
Docket Number: LD12-00223
Commenter: Chemical Processors, Inc
Issue: General BDAT Aspects
Subissue: Soil & Debris
Response:

Soil and debris that are contaminated with prohibited wastes are subject to the land disposal restrictions and must meet the treatment standard for the contaminating waste prior to land disposal. The Agency realizes, however, that there are certain problems associated with regulating hazardous wastes in soil and debris matrices. Because of such problems, the Agency is preparing a separate rulemaking that will establish treatability groups and treatment standards for contaminated soil and debris. Until soil and debris can be better organized into treatability groups, promulgated treatment standards apply. The Agency wants to reiterate that if the contaminated soil and debris cannot be treated to meet the promulgated treatment standards, alternative treatment standards can be established under a site-specific variance from the treatment standards.

In order to be granted a site-specific variance from the treatment standard, the petitioner must demonstrate to the Agency that because the physical (or chemical) properties of the waste differs significantly from the waste analyzed in developing the treatment standard, the waste cannot be treated to specified levels or by the specified methods.

Comment Number: 1-H-16
Docket Number: LD12-00241
Commenter: Nortru, Inc.
Issue: General BDAT Aspects
Subissue: Soil and Debris
Comment:

The Agency has proposed at III.B.3 (54 FR 48489) and III.B.8 (54 FR 48469) to grant a two year national capacity variance for soils and debris contaminated with wastes that are included in the LDR. We support the regulation and Land Disposal Restriction of these materials. We do not agree, however, with a few of the Agency's positions.

1) Although we understand that the Agency intends to propose regulations that will further delineate soils and debris into specific treatability groups with treatment standards, we feel that the agency has left out fuel substitution or material recovery as a viable alternative to the other listed technology based standards. As we have stated in our introduction, we, and other commercial fuel blenders, have had the capability to process solid wastes into both liquid and solid fuels. We believe that some soils and debris are highly amenable to fuel blending, due to contamination with materials that have high energy values, or for material recovery. The Agency has itself recognized that many solid hazardous wastes are amenable to such recovery in 54 FR 43727.

Comment Number: 1-H-16 continued
Docket Number: LD12-00241
Commenter: Nortru, Inc.
Issue: General BDAT Aspects
Subissue: Soil and Debris
Comment:

> "... These practices may be an effective approach to both beneficially use the heating value in solid hazardous wastes and provide the needed treatment capacity for such wastes" (54 FR 43727).

We request that fuel substitution be added as an acceptable technology based treatment standard for all soil and debris for which fuel blending is a viable alternative.

2) Because of our ability to fuel blend many of these materials we question the two year national capacity variance that has been proposed for soils and debris in light of the Agency's own recognition that cement kiln represent ,"...needed treatment capacity for such wastes" (54 FR 43727). Our position and rationale for these wastes are similarly addressed in our comments within item 5.

Comment Number: 1-H-16
Docket Number: LD12-00241
Commenter: Nortru, Inc
Issue: General BDAT Aspects
Subissue: Soil & Debris
Response:

The Agency acknowledges commenter's support. In regard to the fuel substitution issue, EPA wants to point out that the Agency chose not to allow fuel substitution as a treatment method for wastes not amenable to quantification. Because of their inability to be analyzed in treatment residues these wastes must be carefully monitored in thermal units to ensure the best demonstrated treatment. Currently only incineration units complying with 40 CFR 264 Subpart O or 265 Subpart O allow these controls. Consequently, the Agency believes that only incineration units have been demonstrated as BDAT and disagrees with the commenter that fuel substitution should be included as a method of treatment for these wastes. Furthermore, the Agency questions the fuel value of a waste which comprises less than ten percent of the total feed stream to the combustion unit.

Comment Number: 1-H-17
Docket Number: LD12-00269
Commenter: ASARCO
Issue: General BDAT Aspects
Subissue: Soil and Debris
Comment:

A. In the Absence of a Separate Rulemaking, Imposition of Soil and Debris Treatment Standards Is Inappropriate

EPA assumes soil and debris "contaminated" with prohibited wastes are subject to the land disposal restrictions. 54 Fed. Reg. at 48469. However, soil and debris would only be subject to the land disposal restrictions if contaminated by a listed hazardous waste or if the soil or debris was characteristically hazardous. Clearly, for example, soil and debris that contain an EP toxic constituent below the regulatory limit would not be a hazardous waste subject to the land disposal restrictions.

Due to the difficulty of establishing treatability groups and treatment standards, EPA proposes a separate rulemaking for contaminated soil and debris. In the interim, the treatment standards apply unless alternate treatment standards can be established as a site-specific variance or the soil or debris, if treated by combustion, wet-air oxidation, vitrification, or mercury retorting, qualifies for the national capacity variance. As discussed above in relation to the treatment standards proposed for metals, EPA must carefully evaluate and study appropriate treatment standards prior to proposing any such standards in a rulemaking or interim standards that may not be appropriate. It appears EPA, by its own admission, has not conducted the necessary studies to establish treatment standards for soil and debris.

Comment Number: 1-H-17
Docket Number: LD12-00269
Commenter: Asarco
Issue: General BDAT Aspects
Subissue: Soil & Debris
Response:

Soil and debris that are contaminated with prohibited wastes are subject to the land disposal restrictions and must meet the treatment standard for the contaminating waste prior to land disposal. The Agency realizes, however, that there are certain problems associated with regulating hazardous wastes in soil and debris matrices. Because of such problems, the Agency is preparing a separate rulemaking that will establish treatability groups and treatment standards for contaminated soil and debris. Until soil and debris can be better organized into treatability groups, promulgated treatment standards apply.

If the contaminated soil and debris cannot be treated to meet the promulgated treatment standards, alternative treatment standards can be established under a site-specific variance from the treatment standards. In order to be granted a site-specific variance from the treatment standard, the petitioner must demonstrate to the Agency that because the physical (or chemical) properties of the waste differs significantly from the waste analyzed in developing the treatment standard, the waste cannot be treated to specified levels or by the specified methods.

The Agency wants to point out that for metal wastes that are generated as an organo-metallic or in an organic matrix, including "organic debris" (rags, paper, cardboard, clothes, gloves, paints, paint chips, wood, grubbing materials, blankets, hoses, bags, resins, and PVC piping), the Agency has determined that they can be incinerated to destroy the organo-metallic bond or the organic matrix containing the metal, prior to subsequent treatment of the ash, in order to comply with a concentration-based standard or prior to application of the technology-based metal treatment standard. This does not preclude the washing or extraction of metals from an "organic debris" that is only a characteristic waste due to surface contamination.

Additionally, inorganics such as slags, glass, concrete, bricks, and other inorganic solid debris have been defined by the Agency as the "nonfriable inorganic solids" treatability group. These as the inorganic solids that are incapable of passing through a 9.5 mm standard sieve that require crushing, grinding, or cutting in mechanical sizing equipment prior to stabilization, limited to the following inorganic or metal materials: 1) metal slags, 2) glassified slag, 3) glass, 4) concrete (excluding cementitious or pozzolanic

Comment Number: 1-H-17
Docket Number: LD12-00269
Commenter: Asarco
Issue: General BDAT Aspects
Subissue: Soil & Debris
Response: (Continuation)

stabilized hazardous wastes), 5) masonry and refractory bricks, 6) metal cans, containers, drums, or tanks; 7) metal nuts, bolts, pipes, pumps, valves, appliances, or industrial equipment, and 8) "scrap metal" according to 40 CFR 261.1(c)(6). For this treatability group, the Agency has determined a two year national capacity variance and the standards for D004 through D011 wastes do not apply to "inorganic solids debris".

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Comment Number: 1-H-18
Docket Number: LD12-L0007
Commenter: The Chemical Manufacturers Association
Issue: General BDAT Aspects
Subissue: Soil and Debris
Comment:

EPA Should Not Blindly Apply the Derived-From, Mixture and Contained-In Principles to Contaminated Soil and Debris.

EPA addresses the treatment and disposal of contaminated soil and debris in three separate sections of the proposed Third Third rule: Section III.A.8. — Clarification of Applicability of Treatment Standards to Soil and Debris (54 Fed. Reg. at 48,469); Section III.B.3. — Contaminated Soil and Debris Capacity Variance (54 Fed. Reg. at 48,489); and Section V.E. — Clean Up Actions Under the Comprehensive Environmental Response, Compensation and Liability Act (54 Fed. Reg. at 48,502). In Section III.A.8., EPA reiterates its policy decision that soil and debris that are contaminated by listed hazardous wastes are subject to the same BDAT standards as the original listed wastes. CMA objects to the Agency's blind adherence to this policy, and urges the Agency to develop a more rational and workable program for the treatment and disposal of contaminated soil and debris.

EPA continues to adhere to the policy that contaminated soil and debris are subject to the same BDAT standards as the original hazardous waste, even though the Agency has recognized the difficulties and inequities in such a policy, as reflected in the October 10, 1989, "redeposition" Federal Register notice. 54 Fed. Reg. 41,566. In that notice, the Agency discussed at length the problems associated with "strict" adherence to EPA's "derived-from" and "mixture" -

Comment Number: 1-H-18 continued
Docket Number: LD12 - L0007
Commenter: Chemical Manufactures Association
Issue: General BDAT Aspects
Subissue: Soil and Debris
Comment:

rules, as well as the "contained-in principle," as they ap ly to remediating contaminated soil and debris. As EPA notes strict adherence to RCRA's land disposal restrictions (LDR has created a major disincentive in remedial action progra s for excavating and treating contaminated soil and debris. he remediation option that has been selected at many such sit has been a containment remedy. While containment is certa ly appropriate in many cases, there may be situations where e cavation, treatment and redeposition on the same site, eit r in the same "area of contamination" from which the soil wa originally excavated or in some other more environmentally protective area on-site, may be preferable. These issues re discussed in detail in EPA's October 10, 1989, supplementa otice.

CMA filed comments on the October 10, 1989, notic in support of both alternative options proposed by EPA, but e were particularly supportive of alternative two, which woulc allow excavation, treatment, and redeposition at any appropriate location on-site without triggering the RCRA LDRs. C also believes, as set forth in our comments on the October 1 proposal, that EPA has other options to resolve the unintend effects of strictly applying the RCRA LDRs to CERCLA and RCR corrective action remediations. CMA believes that the Agenc could promulgate a 40 CFR Part 261.4(b) exclusion for contaminated soil and debris which is managed under RCRA Section 3004(u), Section 3008(h), or Section 7003 permit or orders. We refer the Agency to our October 10 comments for elaborati on these points.

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Comment Number: 1-H'18 continued
Docket Number: LD12- L0007
Commenter: Chemical Manufacturers Association
Issue: General BDAT Aspects
Subissue: Soil and Debris
Comment:

CMA is disappointed that EPA did not adequately discuss the problems encountered with "blind" adherence to the RCRA LDRs for contaminated soil and debris. We encourage the Agency to include in a final rule a much more detailed discussion of these problems, along the lines of the October 10, 1989 notice. More importantly, if EPA does not adopt a 40 CFR Part 261.4(b) exclusion as outlined above, CMA encourages the Agency to propose an interim solution to the problems caused by applying the derived-from, mixture, and contained-in principles to contaminated soil and debris. As EPA has pointed out, the waste characteristics and matrices of contaminated soil and debris are vastly different from the original wastes for which the BDAT standards were promulgated. Thus, to require incineration, which is the BDAT standard for most organic-type wastes, of contaminated soil and debris that contain only a few parts per million of organics makes no sense. Even EDF and NRDC, in their comments on the October 10 notice, stated that:

> **. . . EDF and NRDC believe that existing BDAT standards may not be universally appropriate for wastes at cleanup sites.**

Therefore, the Agency should develop an interim solution as proposed on October 10, 1989, before facilities involved in both CERCLA and RCRA remediations are required to undertake large-scale incineration of soil and debris containing low levels of organic constituents.

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Comment Number: 1-H18 continued
Docket Number: LD12-L0007
Commenter: Chemical Manufacturers Association
Issue: General BDAT Aspects
Subissue: Soil and Debris
Comment:

B. EPA Should Establish Separate BDAT Standards for Contaminated Soil and Debris.

If EPA rejects CMA's recommendation, we support EPA's long-term objective of promulgating separate BDAT standards for certain contaminated soil and debris "treatability groups." Presumably, such separate standards will take account of the specific waste characteristics and matrix interferences of contaminated soil and debris.

However, as noted above, CMA's immediate concern is for an interim solution, especially for contaminated soil and debris for which national capacity variances expire in August or November of 1990. We again encourage the Agency promptly to propose a reasonable solution to this problem, either along the lines of the October 10 notice or based on the alternate options that CMA articulated in our comments on the October 10 notice.

CMA does not believe, based on the experience of member companies over the last eight years, that a site-specific treatability variance approach suggested by EPA is workable. Experience with the "delisting" program teaches that such "variances" are extremely complicated and cumbersome and take several years to process. Thus, prompt remediation of contaminated soil and debris cannot be accomplished by using the site-specific variance approach unless EPA dramatically revises its procedures and its requirements for data necessary to support such variance requests.

Comment Number: 1-H-18
Docket Number: LD12-L0007
Commenter: The Chemical Manufacturers Association
Issue: General BDAT Aspects
Subissue: Soil & Debris
Response:

Soil and debris that are contaminated with prohibited wastes are subject to the land disposal restrictions and must meet the treatment standard for the contaminating waste prior to land disposal. The Agency realizes, however, that there are certain problems associated with regulating hazardous wastes in soil and debris matrices. Because of such problems, the Agency is preparing a separate rulemaking that will establish treatability groups and treatment standards for contaminated soil and debris. Until soil and debris can be better organized into treatability groups, promulgated treatment standards apply.

If the contaminated soil and debris cannot be treated to meet the promulgated treatment standards, alternative treatment standards can be established under a site-specific variance from the treatment standards. In order to be granted a site-specific variance from the treatment standard, the petitioner must demonstrate to the Agency that because the physical (or chemical) properties of the waste differs significantly from the waste analyzed in developing the treatment standard, the waste cannot be treated to specified levels or by the specified methods.

Comment Number: 1-H-19
Docket Number: LD12-00129
Commenter: Olin Chemicals
Issue: General BDAT Aspects
Subissue: Soil and Debris
Comment:

Clarification of Applicability of Treatment Standards to Soil and Debris (III.A.8)

Olin believes that the definition of scrap in 40 CFR 261.1 provides an adequate basis for exempting materials in this category from becoming a hazardous waste. The Agency needs to approach the disposal problems of scrap material and debris in light of the physical characteristics of the waste and the BDAT standard for that material. If the waste were a steel I-beam, it is not amenable to roasting, retorting or even stabilization. The same can be said for concrete blocks and bricks. These materials (demolition debris) do not lend themselves to testing for the characteristics of hazardous waste either by EP or TCLP methods: how is a sample of a pipe 6 inches diameter by 20 feet long tested for mercury; how is a representative sample taken?

Olin recommends that scrap material and debris, as defined in section III.B.3.; be granted a treatability variance from the land disposal restrictions. This variance could be subject to the standards that USEPA is developing for contaminated soil and debris.

Comment Number: 1-H-19
Docket Number: LD12-00129
Commenter: Olin
Issue: General BDAT Aspects
Subissue: Soil & Debris
Response:

Soil and debris that are contaminated with prohibited wastes are subject to the land disposal restrictions and must meet the treatment standard for the contaminating waste prior to land disposal. The Agency realizes, however, that there are certain problems associated with regulating hazardous wastes in soil and debris matrices. Because of such problems, the Agency is preparing a separate rulemaking that will establish treatability groups and treatment standards for contaminated soil and debris. Until soil and debris can be better organized into treatability groups, promulgated treatment standards apply.

If the contaminated soil and debris cannot be treated to meet the promulgated treatment standards, alternative treatment standards can be established under a site-specific variance from the treatment standards. In order to be granted a site-specific variance from the treatment standard, the petitioner must demonstrate to the Agency that because the physical (or chemical) properties of the waste differs significantly from the waste analyzed in developing the treatment standard, the waste cannot be treated to specified levels or by the specified methods.

The Agency wants to point out that for metal wastes that are generated as an organo-metallic or in an organic matrix, including "organic debris" (rags, paper, cardboard, clothes, gloves, paints, paint chips, wood, grubbing materials, blankets, hoses, bags, resins, and PVC piping), the Agency has determined that they can be incinerated to destroy the organo-metallic bond or the organic matrix containing the metal, prior to subsequent treatment of the ash, in order to comply with a concentration-based standard or prior to application of the technology-based metal treatment standard. This does not preclude the washing or extraction of metals from an "organic debris" that is only a characteristic waste due to surface contamination.

Additionally, inorganics such as slags, glass, concrete, bricks, and other inorganic solid debris have been defined by the Agency as the "nonfriable inorganic solids" treatability group. These as the inorganic solids that are incapable of passing through a 9.5 mm standard sieve that require crushing, grinding, or cutting in mechanical sizing equipment prior to stabilization, limited to the following inorganic or metal materials: 1) metal slags, 2) glassified slag, 3) glass, 4) concrete (excluding cementitious or pozzolanic

Comment Number: 1-H-19
Docket Number: LD12-00129
Commenter: Olin
Issue: General BDAT Aspects
Subissue: Soil & Debris
Response: (Continuation)

stabilized hazardous wastes), 5) masonry and refractory bricks, 6) metal cans, containers, drums, or tanks; 7) metal nuts, bolts, pipes, pumps, valves, appliances, or industrial equipment, and 8) "scrap metal" according to 40 CFR 261.1(c)(6). For this treatability group, the Agency has determined a two year national capacity variance and the standards for D004 through D011 wastes do not apply to "inorganic solids debris".

Comment Number: 1 - I01

Docket Number: LD 12 - 00081

Commenter: ENVIROSAFE MANAGEMENT SERVICES, INC.

Issue: GENERAL BDAT ASPECTS

Subissue: STABILIZATION

Comment:

Page 48494, 3rd Col.	**The Agency is taking a position that stabilization for organics is inappropriate. We disagree strongly with that statement and are providing an attached copy of a paper which indicates that stabilization of organic materials can be an effective treatment process. We would encourage the Agency to reconsider their position and not exclude stabilization solely on an opinion that it may be dilution.**

Comment Number: 1-I-1
Docket Number: LD12-00081
Commenter: Envirosafe Mgmt. Services
Issue: General BDAT Aspects
Subissue: Stabilization
Response:

It is true that the Agency believes that organics are not generally amenable to stabilization, and that organics present in wastes may, in fact, inhibit stabilization of metal constituents. However, most land ban disposal standards require only specific quantitative levels of treatment for regulated components, and do not require a method of treatment. In all these cases a generator who complies with the level of treatment may use any technology he chooses, not just the technology on which the performance standard was based.

With respect to wastes for which a method of treatment was specified, rather than a level of treatment, The Agency has usually promulgated incineration as method of treatment for organic nonwastewaters. Since incineration treats organics to the analytical detection limit, EPA believes that no other technology is likely to perform any better, including stabilization.

Comment Number: 1-J-1
Docket Number: LD12-00088
Commenter: INCO U.S., INCO LTD., AND INTERNATIONAL METALS RECLAMATION CO.
Issue: GENERAL BDAT ISSUES
Subissue: RECOVERY/RECYCLING TECHNOLOGIES
Comment:

Second, we agree with EPA that recovery technologies, particularly metals recovery technologies, should be selected as Best Demonstrated Available Technology ("BDAT") for hazardous wastes that are subject to land disposal restrictions. Recovery technologies not only are more desirable in terms of environmental protection; they also further the important resource conservation and waste minimization objectives of the statute.

II. EPA Has Correctly Expressed a Preference for Recycling/Recovery Technologies Over Conventional Treatment in Identifying BDAT.

In the rulemaking notice, EPA expresses a general preference for "technologies that further the statutory goals of waste minimization and recycling . . . over more conventional treatment . . . ."6/ This preference for recycling/recovery technologies is entirely appropriate. By designating a recovery technology as BDAT, EPA not only protects public health and the environment, but also helps achieve RCRA's parallel goals of conserving resources, recovering useful materials, and minimizing the volume of solid and hazardous waste that is disposed of on land.7/ Metals recovery technologies have the additional

(CONTINUED)

Comment Number: 1-J-1 (CONTINUED)
Docket Number: LD12-00088
Commenter: INCO, U.S., INCO LTD., and International Metals Reclamation Co.
Issue: General BDAT Aspects
Subissue: Recovery / Recycling Technologies
Comment:

advantages of helping American industries produce metal-containing commodities at lower cost and reducing U.S. reliance on foreign suppliers of critical materials. In all these respects, recovery technologies, in contrast to conventional waste treatment, are responsive to the congressional findings and objectives set forth in RCRA.8/

6/ 54 Fed. Reg. at 48381/1.

7/ See 54 Fed. Reg. at 48422/1, 48423/2-3, 48457/1.

8/ See RCRA Section 1002(c), 42 U.S.C. § 6901(c) (reciting the congressional finding that "(1) millions of tons of recoverable material which could be used are needlessly buried each year; (2) methods are available to separate usable materials from solid waste; and (3) the recovery and conservation of such materials can reduce the dependence of the United States on foreign resources and reduce the deficit in its balance of payments"); RCRA Section 1003(a)(6), 42 U.S.C. § 6902(a)(6) (articulating the congressional objective of "minimizing . . . the land disposal of hazardous waste by encouraging . . . materials recovery"). See also H.R. Rep. No. 1491, 94th Cong., 2d Sess. 11 (1976) (RCRA "proposes a way to lessen the drain on our domestic resources and to decrease our dependence on foreign sources of raw material and energy, both of which can be reclaimed from waste").

9/ 54 Fed. Reg. at 48457/1.

Comment Number: 1-J-1

Docket Number: LD12-00088

Commenter: Inco U.S., Inco LTD., & International Metals Reclamation Co.

Issue: General BDAT Aspects

Subissue: Recovery/Recycling Technologies

Response:

EPA acknowledges the commenter's support

Comment Number: 1-J-2
Docket Number: LD12-000109
Commenter: Freeze Technologies Corporation
Issue: General BDAT Aspects
Subissue: Recovery/ Recycling Technologies
Comment:

By-product recovery and recycling need to be explicitly included as accepted methods for all wastes, not just the few where 'Recovery As Method Of Treatment' is designated as BDAT.

Comment Number: 1-J-2
Docket Number: LD12-00109
Commenter: Freeze Technologies Co.
Issue: General BDAT Aspects
Subissue: Recovery/Recycling Technologies
Response:

Compliance with a concentration-base treatment standard requires only that the treatment level be achieved; once achieved, the waste may be land disposed. The waste need not be treated by the BDAT technology; in fact, a concentration-based treatment standard provides maximum flexibility in one's choice of treatment technology because any treatment, including recycling or any combination of treatment technologies, unless prohibited (e.g., impermissible dilution) or unless defined as land disposal (e.g., land treatment), can be used to achieve these standards.

Where EPA does specify a method of treatment, this also would not preclude any recovery preceding treatment by the designated method. For example, the incineration standard for F024 wastes do not preclude recovery of the still bottoms. However, nonwastewater residues from the recovery process would then have to be incinerated.

Comment Number: 1-J-3
Docket Number: LD12-00128
Commenter: Thomas A. Robinson, Ph.D.
Issue: General BDAT Aspects
Subissue: Recovery / Recycling Technologies
Comment:

Recycling Potential of U and P Wastes

We agree that the legitimate recycling of P and U materials is often practiced and this practice should not be considered as the processing of a hazardous waste. Off-spec product may often be sold to another customer whose specifications allow the variation in the product. At other times, product may be returned and reprocessed and again sold as first quality product. This practice should not be construed as the management of hazardous waste because at no time is the disposal of the product considered as an economically viable alternative. Greater recognition should be given to the reprocessing of off-spec product and its sale as first quality product. While the contaminates or other substances removed from the product during reprocessing may be considered as hazardous waste and should be properly managed as such, the product itself never was considered as a waste and no consideration was given to the disposal or destruction of the off-spec product.

Comment Number: 1-J-3
Docket Number: LD12-00128
Commenter: Thomas A. Robinson Ph. D.
Issue: General BDAT Aspects
Subissue: Recovery/Recycling Technologies
Response:

Compliance with a concentration-base treatment standard requires only that the treatment level be achieved; once achieved, the waste may be land disposed. The waste need not be treated by the BDAT technology; in fact, a concentration-based treatment standard provides maximum flexibility in one's choice of treatment technology because any treatment, including recycling or any combination of treatment technologies, unless prohibited (e.g., impermissible dilution) or unless defined as land disposal (e.g., land treatment), can be used to achieve these standards. Furthermore, Section 261.33 materials are normally not solid wastes if recycled legitimately so that recycling is always a viable management option for these materials.

Comment Number: 1-J-4
Docket Number: LD12-00172
Commenter: Hazardous Waste Treatment Council
Issue: General BDAT Aspects
Subissue: Recovery / Recycling Technologies
Comment:

A. Recycling vs. Treatment: Qualitative Off-Sets

As discussed in the section on K048-K052 wastes, all technologies, whether recycling or treatment must be evaluated on the basis of the performance of the technology relative to the characteristics of all residual by-products generated. Qualitative preferences for recycling over treatment technologies should be applied in BDAT decisions only after the Agency has proven that the residuals generated are equivalent or less concentrated in BDAT constituents than any of the treatment technologies considered. Statistical tests such as the ANOVA process should be applied in order to make certain that the decision is objective. Considering the large number of damage cases and CERCLA sites resulting from improper recycling (i.e., smelting sites) EPA must take into account residual characteristics for recycling technologies in setting BDAT standards.

Comment Number: 1-J-4
Docket Number: LD12-00172
Commenter: The HWTC
Issue: General BDAT Aspects
Subissue: Recovery/Recycling Technologies
Response:

EPA disagrees with the commenter's position. The legislative history to the land ban states a strong preference for recovery over non-recovery treatment technologies within the meaning of RCRA Section 3004(m). EPA is validating that preference in including solvent extraction as the partial basis for the treatment of K048-K052. wastes. Although overall it does not remove or destroy organic constituents quite as effectively as incineration, it does substantially reduce waste toxicity. There are modest recovery benefits associated with the technology, and some waste minimization benefits (the overall volume of waste to be disposed of after stabilization treatment is slightly less than for stabilized incineration ash.)

Comment Number: 1-J-5
Docket Number: LD12-00269
Commenter: Asarco
Issue: General BDAT Aspects
Subissue: Recovery / Recycling Technologies
Comment:

B. Reclamation Of Hazardous Wastes Should Be Preferred Instead Of Treatment Whenever Possible

Asarco supports EPA's preference to base BDATs on technologies that further the statutory goals of waste minimization and recycling over more conventional treatment. 54 Fed. Reg. at 48381. As the preamble to the proposed rule correctly emphasizes, a central purpose and objective of RCRA, as amended by HSWA, is the recovery of natural resources through effective waste management practices, and that selection of metals recovery, recycling and waste minimization technology as a BDAT fulfills that goal of resource conservation. See e.g., 54 Fed. Reg. at 48445-46 and 48457. For example, EPA notes in its discussion on the proposal to establish resmelting technology as the treatment standard for the "high-zinc" category of K061 wastes that it

> still views high temperature metals recovery as superior because it furthers the statutory objectives of recycling and waste minimization while still achieving significant reductions of metal mobility. (See H. Rep. No. 198, 98 Cong., 1st Sess. 31 describing a preferred hierarchy of management options, and ranking recycling and metals recovery as preferable options to conventional treatment).

Comment Number: 1-J5 continued
Docket Number: LD12-00269
Commenter: ASARCO
Issue: General BDAT Aspects
Subissue: Recovery / Recycling Technologies
Comment:

54 Fed. Reg. at 48457.

In fact, EPA has already expressed this preference in other rulemakings and policy decisions, such as its pollution prevention policy, and should be promoted whenever possible in EPA's various programs. To be consistent with Congress' express mandate, EPA must encourage the regulated community to reuse, recycle, and reclaim wastes as a substitute for treatment and disposal.[8] As Asarco has proven through its E/TI operations, reclamation of usable metals from wastes is a particularly appropriate and achievable alternative to the treatment and disposal of metal-bearing wastes. The additional time and effort that may be necessary for EPA to study further the ability of the primary non-ferrous mineral processing and other metal recovery industries to recover safely usable or recoverable metal-bearing wastes is more than justified by the waste minimization and economic returns achieved.

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[8] EPA should allow storage of these materials prior to such reclamation in order to facilitate the legitimate reuse of valuable minerals. Contrary to EPA's assertions at 54 Fed. Reg. 48496, storage in land-based units does not necessarily constitute disposal when these materials are destined for reuse and reclamation in primary mineral processing operations. As discussed in the previous section, EPA's attempt to assert jurisdiction over such materials constitutes an impermissible intrusion into processing operations that was criticized in the

Comment Number: 1-J-5 continued
Docket Number: LD12-00269
Commenter: ASARCO
Issue: General BDAT Aspects
Subissue: Recovery / Recycling Technologies
Comment:

However, the stated preference for waste recycling and materials recovery technology is not adequately reflected in the proposed BDATs, which seem to favor conventional treatment for the most part. For example, the wastewater treatment standards EPA proposes are invariably concentration-based, with no attempt to determine if reclamation is feasible. Rather, EPA's proposed treatment standard for wastewaters containing EP toxic metals is pH adjustment and precipitation, with or without the addition of chemicals besides neutralization reagents. Through this process, the metals are transformed into relatively insoluble solid materials, which are likely to exhibit one or more of the EP toxicity characteristics and could require treatment to additional BDATs according to EPA's interpretation of residue treatment.

AMC case. 824 F.2d at 1193.

Comment Number: 1-J6 continued
Docket Number: LD12-00269
Commenter: ASARCO
Issue: General BDAT Aspects
Subissue: Recovery / Recycling Technologies
Comment:

Further, EPA has proposed recycling technologies as a BDAT for relatively few non-wastewater wastes, *e.g.*, thermal recovery as a treatment method for D008 high lead subcategory, D008 lead acid batteries and D006 cadmium batteries; resmelting in high temperature zinc metals recovery furnace for K061 high zinc subcategory; roasting or retorting as a method of treatment D009 high mercury subcategory and certain mercury containing listed wastes; and recovery or thermal recovery as methods of treatment for certain P and U list metallic compounds. Even in these cases, the language describing the technology is narrow and implies that recycling and treatment are equivalent, as in "recovery as a method of treatment."

In particular, the designation of "resmelting in high temperature zinc metals recovery furnace" as BDAT for the K061 high zinc subcategory, or "thermal recovery" in other cases, defines the treatment standard too narrowly. 54 Fed. Reg. at 48439. Asarco suggests that the BDAT in these cases should be specified as "metals recovery through resmelting or equivalent technology," or even simply "metals recovery." This language would allow industry to use the appropriate recovery method for reclaiming materials from wastes. Such language would be consistent with EPA's supplement on the proposed burning and blending rules where a hazardous waste generated in an SIC 33 process smelted in an SIC 33 industrial furnace is considered "indigenous." 54 F.R. 43718, 43731, (Oct. 26, 1989). The

Comment Number: 1-J.5 continued
Docket Number: LD12-00269
Commenter: ASARCO
Issue: General BDAT Aspects
Subissue: Recovery / Recycling Technologies
Comment:

addition of "equivalent processes" would allow for the use of other technologies, such as hydrometallurgical processes.

Asarco urges the Agency to evaluate more carefully the potential for metals recovery as the preferred BDAT and as an alternative to treatment for non-wastewaters containing EP toxic metals, in characteristic as well as listed hazardous wastes. At a minimum, metals recovery should be designated as an alternate BDAT. Appendix B discusses in detail why concentration-based treatment standards are not relevant when metals recovery is designated as BDAT and proposes a test of compliance with BDAT for metals recovery.

Further, if metals recovery is so designated, the test of compliance should not be based on residue or residue extract concentration, but on a determination that the assay of metal in the waste being recovered exceeds the metal concentration in the waste from the process in which reclamation is occurring. As discussed above, primary smelters and refineries currently have the capacity to recover valuable metal constituents from primary feedstock. Therefore, metals recovery is technically feasible and should be the preferred BDAT, where appropriate, to recover metal constituents from wastes. Appendix C briefly addresses the potential for metals recovery through Asarco's non-ferrous smelting operations.

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Comment Number: 1-J-5 continued
Docket Number: LD12-00269
Commenter: ASARCO
Issue: General BDAT Aspects
Subissue: Recovery / Recycling Technologies
Comment:

APPENDIX B
CONCENTRATION BASED TREATMENT STANDARDS ARE NOT RELEVANT IF BDAT IS METALS RECOVERY

The Agency's statement in the preamble to the proposed third third rule seems to indicate that a concentration-based treatment standard would allow metals recovery as an acceptable form of treatment if such recovery meets the standard. For instance, the Agency states that:

> a concentration-based treatment standard provides maximum flexibility in one's choice of treatment technology because any treatment including recycling, . . . unless prohibited . . . can be used to achieve these standards.

54 F.R. at 48381. This is yet another attempt to equate materials recovery and treatment despite the fact that fundamental differences exist between the two. These differences could very well lead to difficulties in applying a concentration-based standard to verify compliance with land disposal restrictions when the waste is subjected to metals recovery.

For inorganic non-wastewaters containing EP toxic metals, treatment technologies identified by EPA in its proposed regulation usually leave the quantity of constituents of concern the same even after treatment. Only their mobility has been reduced because of the way these constituents are bound, e.g., a cementitious matrix in stabilization and an iron silicate slag structure in vitrification. Treatment produces a unique residue that can be tested for compliance with the treatment method.

6
Comment Number: 1-5 continued
Docket Number: LD12-00269
Commenter: ABARCO
Issue: General BDAT Aspects
Subissue: Recovery / Recycling Technologies
Comment:

By contrast, in metals recovery, the constituent or constituents of concern are recovered and the toxicity in any remaining waste is significantly reduced. If the metals recovery is achieved in a non-ferrous smelting furnace, the residue from smelting has an iron-silicate slag structure similar to that discussed in the proposed rule in reference to vitrification as a treatment technology for arsenic. 54 Fed. Reg. at 48432. However, this residue is derived principally from the smelting of primary feedstocks and is likely to be only minimally influenced by the reuse or recovery of metals from hazardous wastes. Also, if the waste contains more than one metal to be recovered, processing is likely to produce more than one residue. In fact, the residues themselves may be further processed for the recovery of other metals.

This issue is further illustrated by the following example: A metals reclamation facility, such as E/TI, Corpus Christi, that is reclaiming D006 (cadmium) wastewaters produces a cadmium hydroxide reclamation product that contains the recovered cadmium values and a treated water stream that may be discharged pursuant to an NPDES permit. This reclamation product is destined for use in the chemical and smelting industries (e.g., to supplement primary feedstock). The treated water at Corpus Christi is discharged pursuant to an NPDES permit, and, consequently, no residue remains on which to apply treatment standards. Moreover, the cadmium hydroxide reclamation product is not a residue since it is being reclaimed.

Comment Number: 1-J5 continued
Docket Number: LD12-00269
Commenter: ASARCO
Issue: General BDAT Aspects
Subissue: Recovery / Recycling Technologies
Comment:

Asarco believes metals recovery is superior to treatment, since it returns recovered metals to commerce and, in the case of smelting, any remaining unrecovered metals are contained in a silicate slag that is similar to the vitrification and cementitious fixation identified in the proposed rule. 54 Fed. Reg. at 48432. Therefore, concentration-based treatment standards are not relevant to or appropriate for metals recovery. To ascertain or verify that metals recovery is actually occurring, Asarco suggests as a possible test that the concentration of metal in any hazardous waste that is reclaimed exceeds the concentration of metal in the waste generated by the process in which metal has been reclaimed. This should not be interpreted to mean that chemical fixation and vitrification should not be considered BDATs but rather that the Agency should consider metals recovery at least an alternative to treatment and disposal.

Comment Number: 1-J-5
Docket Number: LD12-00269
Commenter: Asarco
Issue: General BDAT Aspects
Subissue: Recovery/Recycling Technologies
Response:

The EPA's progress over the years in improving environmental quality through its media-specific pollution control programs has been substantial. Over the past two decades, standard industrial practice for pollution control concentrated to a large extent on "end of pipe" treatment or land disposal of hazardous and non-hazardous wastes. However, EPA realizes that there are limits as to how much environmental improvement can be achieved under these programs which emphasize management after pollutants have been generated. EPA believes that reducing or eliminating discharges and/or emissions to the environment through the implementation of source reduction and environmentally sound recycling practices can provide additional environmental improvements often with the added benefits of cost savings and reduced levels of treatment, storage and disposal. Where source reduction and recycling are unavailable or inappropriate or ineffective, the EPA prefers technologies resulting in the destruction of hazardous constituents, where such destruction may be either thermal (i.e., incineration or burning) or chemical, especially for organics. Where neither recovery nor destruction is available or appropriate, immobilization (stabilization) is often effective, specially for inorganic constituents.

Under section 3002(b) and 3005(h), hazardous waste generators are required to certify that they have a program in place to reduce the volume or quantity and toxicity of hazardous waste to the degree determined by the generator to be economically practicable. EPA encourages hazardous waste generators to pursue source reduction and environmentally sound recycling wherever possible to reduce the need for and costs of subsequent treatment, storage and disposal.

Compliance with a concentration-base treatment standard requires that the treatment level be achieved; once achieved, the waste may be land disposed. The waste need not be treated by the BDAT technology; in fact, a concentration-based treatment standard provides maximum flexibility in one's choice of treatment technology because any treatment, including recycling or any combination of treatment technologies, unless prohibited (e.g., impermissible dilution) or unless defined as land disposal (e.g., land treatment), can be used to achieve these standards.

Comment Number: 1 - 5 - 6
Docket Number: L012-00088.
Commenter: Witmer, Cutler + Pickering (Inco United States)
Issue: General BDAT Aspects
Subissue: Recovery/Recycling Technologies
Comment:

II. EPA Has Correctly Expressed a Preference for Recycling/Recovery Technologies Over Conventional Treatment in Identifying BDAT.

In the rulemaking notice, EPA expresses a general preference for "technologies that further the statutory goals of waste minimization and recycling . . . over more conventional treatment . . . ."6/ This preference for recycling/recovery technologies is entirely appropriate. By designating a recovery technology as BDAT, EPA not only protects public health and the environment, but also helps achieve RCRA's parallel goals of conserving resources, recovering useful materials, and minimizing the volume of solid and hazardous waste that is disposed of on land.

Comment Number: 1-J-6 (continued)
Docket Number: LD12-00088
Commenter: Wilmer, Cutler + Pickering (Inco United States)
Issue: General BDAT Aspects
Subissue: Recovery / Recycling Technologies
Comment:

7/ Metals recovery technologies have the additional advantages of helping American industries produce metal-containing commodities at lower cost and reducing U.S. reliance on foreign suppliers of critical materials. In all these respects, recovery technologies, in contrast to conventional waste treatment, are responsive to the congressional findings and objectives set forth in RCRA.8/

6/ 54 Fed. Reg. at 48381/1.

7/ *See* 54 Fed. Reg. at 48422/1, 48423/2-3, 48457/1.

8/ *See* RCRA Section 1002(c), 42 U.S.C. § 6901(c) (reciting the congressional finding that "(1) millions of tons of recoverable material which could be used are needlessly buried each year; (2) methods are available to separate usable materials from solid waste; and (3) the recovery and conservation of such materials can reduce the dependence of the United States on foreign resources and reduce the deficit in its balance of payments"); RCRA Section 1003(a)(6), 42 U.S.C. § 6902(a)(6) (articulating the congressional objective of "minimizing . . . the
(continued...)

Comment Number: 1-J-6
Docket Number: LD12-00088
Commenter: Inco US Inc., Inco LTD., The Int. Metals Reclamat. Co., Inc.
Issue: General BDAT Aspects
Subissue: Recovery/Recycling Technologies
Response:

The EPA's progress over the years in improving environmental quality through its media-specific pollution control programs has been substantial. Over the past two decades, standard industrial practice for pollution control concentrated to a large extent on "end of pipe" treatment or land disposal of hazardous and non-hazardous wastes. However, EPA realizes that there are limits as to how much environmental improvement can be achieved under these programs which emphasize management after pollutants have been generated. EPA believes that reducing or eliminating discharges and/or emissions to the environment through the implementation of source reduction and environmentally sound recycling practices can provide additional environmental improvements often with the added benefits of cost savings and reduced levels of treatment, storage and disposal. Where source reduction and recycling are unavailable or inappropriate or ineffective, the EPA prefers technologies resulting in the destruction of hazardous constituents, where such destruction may be either thermal (i.e., incineration or burning) or chemical, especially for organics. Where neither recovery nor destruction is available or appropriate, immobilization (stabilization) is often effective, specially for inorganic constituents.

Under section 3002(b) and 3005(h), hazardous waste generators are required to certify that they have a program in place to reduce the volume or quantity and toxicity of hazardous waste to the degree determined by the generator to be economically practicable. EPA encourages hazardous waste generators to pursue source reduction and environmentally sound recycling wherever possible to reduce the need for and costs of subsequent treatment, storage and disposal.

Comment Number: 1-5-7
Docket Number: L012-00088
Commenter: Wilmer, Cutler + Pickering (Inco United States)
Issue: General BOAT Aspects
Subissue: Recovery / Recycling Technologies
Comment:

EPA Should Make Clear that When Thermal Recovery Is Specified as a Method of Treatment, It Need Not Occur at a Single Facility.

For a number of wastes covered by the earlier Land Disposal Restriction Rules (e.g., high zinc K061) or by the present proposal (e.g., cadmium batteries, a nonwastewater form of D006), EPA has specified Thermal Recovery (or Resmelting in a High Temperature Metals Recovery Furnace) as the method of treatment.15/ As indicated in Part II above, we agree with EPA that thermal recovery technologies should be specified as the method of treatment under Section 3004(m)(1) of RCRA for hazardous wastes that contain recoverable metal values. Accordingly, we support the designation of Thermal Recovery as a Method of Treatment for cadmium batteries.

Comment Number: 1-J-7
Docket Number: LD12-00088
Commenter: Inco US Inc., Inco LTD., The Int. Metals Reclamat. Co., Inc.
Issue: General BDAT Aspects
Subissue: Recovery/Recycling Technologies
Response:

The Agency acknowledges the commenter's support

Comment Number: 1-K-1

Docket Number: LD12-00107

Commenter: National Association of Manufactoress

Issue: General BDAT Aspects

Subissue: Treatment Standards for Treatability Groups

Comment:

Waste Treatment Standards in the Third Third Rule

For the most part, the Third Third rule details EPA's proposed treatment standards set for specific types of wastes. By dividing the listed wastes with similar chemical and physical properties that are generated by similar industries or from similar processes, EPA believes the wastes can lend themselves to similar treatment technologies. For each treatability group, a best demonstrated available technology (BDAT) was identified. A treatment standard was then established, either a maximum constituent concentration or a specific technology. NAM sees the need for maximum flexibility in designing the standards.

When a treatment standard is expressed as a concentration, any technology or combination of treatment technologies may be used to achieve the standard. When the standard is expressed as a required treatment method, that particular technology must be used to treat the waste. Generators or treaters may use alternate technologies if they can demonstrate that the alternate technology can achieve a level of performance equivalent to the specified treatment method.

NAM policy states that standards should be formulated as performance standards rather than as specification standards on environmental or scientific need. With the environmental benefit of a total ban on land disposal of hazardous waste, even after treatment, the imposition of such stringent standards as proposed by EPA remain excessive and overreaching leaving some problems unsolved. We fear more problems will be created.

Comment Number: 1-K-1
Docket Number: LD12-00107
Commenter: National Association of Manufacturers
Issue: General BDAT Aspects
Subissue: Treatment Standards for Treatability Groups
Response:

The commenter infers that facilities should have an unrestricted choice of technologies to use in complying with the treatment standards. EPA disagrees that this should be the case. As part of establishing its treatment standard, EPA designates one or more technologies as best demonstrated available technology (BDAT). In developing its standards, EPA considers the performance achieved on all land disposal residuals generated by those technologies and reflects that performance in its standards. EPA establishes performance standards rather than mandates the use of a specific technology to provide some measure of flexibility to generators to identify alternatives that will achieve the same or better performance at a lower cost or to meet some other site-specific need. Technologies that produce residuals that are less effectively treated are not BDAT and should not be used (unless a BDAT variance can be justified).

Compliance with performance standards may be monitored by measuring the concentration level of the hazardous constituents in the waste, treatment residual, or in the extract of the waste or treatment residual. When treatment standards are set as performance levels the regulated community may use any technology not otherwise prohibited (such as impermissible dilution) to treat the waste to meet the treatment standards. Treaters thus are not limited to use of only BDAT. However, when treatment standards are expressed as specific technologies, such technologies must be employed. Ordinarily, residues resulting from application of these technologies are no longer prohibited from land disposal.

Comment Number: 1-L-1
Docket Number: LD12-00110
Commenter: Thermal KEM / CyanoKEM
Issue: General BDAT Aspects
Subissue: Ammonia Wastes
Comment:

B. Ammonia Waste

Waste that contain greater than 1% ammonia are difficult to treat to BDAT levels due to the complexing of ammonia with the metal constituents. In this case some form of ammonia stripping may be required to prepare the wastes for treatment of metals.

Comment Number: 1-L-1
Docket Number: LD12-00110
Commenter: Thermal KEM/CyanoKEM
Issue: General BDAT Aspects
Subissue: Ammonia Wastes
Response:

Where metals in wastewaters require treatment to meet the regulatory numerical standards, a generator may use any technology, or combination of technologies he chooses. Therefore, ammonia stripping is allowed. For instances where only a method of treatment is required, i.e. chemical precipitation for metals removal from wastewaters, nothing precludes the generator from pretreating the waste using ammonia stripping, so long as chemical precipitation is used subsequently.

Comment Number: 1-L-2
Docket Number: L012-00172
Commenter: Hazardous Waste Treatment Council
Issue: General BDAT Aspects
Subissue: Ammonia Wastes
Comment:

2. Ammonia Waste

Waste that contain greater than 1% ammonia are difficult to treat to BDAT levels due to the complexing of ammonia with the metal constituents. In this case some form of ammonia stripping may be required to prepare the wastes for treatment of metals.

Comment Number: 1-L-2
Docket Number: LD12-00172
Commenter: The HWTC
Issue: General BDAT Aspects
Subissue: Ammonia Wastes
Response:

Where metals in wastewaters require treatment to meet the regulatory numerical standards, a generator may use any technology, or combination of technologies he chooses. Therefore, ammonia stripping is allowed. For instances where only a method of treatment is required, i.e. chemical precipitation for metals removal from wastewaters, nothing precludes the generator from pretreating the waste using ammonia stripping, so long as chemical precipitation is used subsequently.

Comment Number: 1- M-1
Docket Number: LD12-00214
Commenter: Browning-Ferris Industries
Issue: General BDAT Aspects
Subissue: Technology as Treatment Standard
Comment:

X. The Final Regulation Should Specify Treatment Parameters For Required Treatment Methods To Ensure Quality of Treatment

In the proposed regulation, some treatment standards are expressed as a required technology rather than as a concentration-based standard. See, e.g., 54 Fed. Reg. 48381. In the final regulation (or in accompanying guidance), EPA should specify operating parameters for the required treatment methods in order to ensure that the treatment process is well designed and operated, and so that the application of the treatment process to the waste accomplishes what EPA assumed would be accomplished when it set the standard. Although some treatment facilities are subject to EPA or state regulation through the RCRA permitting program (e.g., incinerators), other treatment facilities are not. These unregulated facilities must be required to meet minimum operating parameters in order to assure that effective treatment is being performed. For example, the regulation (or guidance) should specify the temperatures that must be met in performing vitrification of waste.

Comment Number: 1-M-1
Docket Number: LD12-00214
Commenter: Browning Ferris Industries
Issue: General BDAT Aspects
Subissue: Technology as Treatment Standard
Response:

The Agency agrees that there is some merit in the commenter's suggestion that operating parameters should be specified. The Agency has modified the descriptions of the required treatment methods in 40 CFR 268.42 to include, whenever possible, operating parameters and detailed descriptions of required treatment trains. While the Agency acknowledges that further work could be done, it has neither the data, the resources, nor the time to further specify operating parameters in the Third Third final rule.

Comment Number: 1-M-2

Docket Number: LD12-00110

Commenter: ThermalKEM / CyanoKEM

Issue: General BDAT Aspects

Subissue: Technology as Treatment Standard

Comment:

EPA, when establishing the method as the BDAT standard, should also specify some operating parameters to ensure that the treatment process is well designed and operated on a routine basis at all locations. In setting incineration as a method specific standard, there is assurance that the process will be well operated as the Subpart O requirements establish specific process control parameters such as minimum temperatures, CO and combustion gas velocity as part of the operating permit that ensure proper operation. However, no other treatment technology has operating parameters established under 40CFR Part 264 or 265 that ensure proper operation or treatment performance.

For example, no operating parameters are specified for wet air oxidation or carbon absorption technologies. In setting BDAT standards based on these methods, EPA should specify operating parameters, if no concentration based standards are being promulgated. These important operating parameters could be identified from the engineering studies in the background documents for the waste codes involved.

As an example, carbon absorption is specified as the method BDAT standard for many wastewaters. Yet there are no operating standards promulgated to ensure that such systems are well operated. How often carbon cannisters are regenerated is left up to the operator. Yet it is certain that treatment will not be effective if these cannisters are regenerated only once every five years for example. To avoid such sham treatment, EPA must specify some operating requirements that will provide for proper practice of these technologies. This is only necessary where EPA is not setting concentration based treatment standards.

Comment Number: 1-M-2
Docket Number: LD12-
Commenter: ThermalKEM/CyanoKEM
Issue: General BDAT Aspects
Subissue: Technology as Treatment Standard
Response:

Because of the diversity of wastes an of commercially available treatment process equipment, EPA believes it would be a futile task to identify design and operating specifications for each treatment technology that EPA has required in a regulatory standard. For example, different grades of activated carbon are tailored to different organic molecules. Different grades are used also to achieve different carbon column pressure drops. Different grades are used if the carbon is disposed of when exhaust, as opposed to regenerated. Different grades of carbon are used depending on whether the carbon is used as powdered carbon, or used in contract columns. Further, EPA relies on its permit writers to define the process on the Part B Permit, on a case by case basis.

Comment Number: I-M-3

Docket Number: LD12-00124

Commenter: Rollins Environmental Services

Issue: General BDAT Aspects

Subissue: Technology as Treatment Standard

Comment:

RES understands why EPA must specify a treatment technology in some circumstances, rather than a numerical standard. However, when a technology is specified, some operating standard for that technology must also be specified. Otherwise, there is no assurance that any significant degree of treatment has taken place. Further, shoddy operators can create environmental risks in the absence of such standards.

In the case of Subpart O incinerators, such regulatory standards exist. No similar regulatory standards exist for other technologies required in the proposed regulation. We believe EPA must establish some such basic standards in this regulation.

Comment Number: 1-M-3
Docket Number: LD12-00124
Commenter: Rollins Environmental Services
Issue: General BDAT Aspects
Subissue: Technology as Treatment Standard
Response:

The Agency agrees that there is some merit in the commenter's suggestion that operating parameters should be specified. The Agency has modified the descriptions of the required treatment methods in 40 CFR 268.42 to include, whenever possible, operating parameters and detailed descriptions of required treatment trains. While the Agency acknowledges that further work could be done, it has neither the data, the resources, nor the time to further specify operating parameters in the Third Third final rule.

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Comment Number: 1-M-4
Docket Number: LD12-00172
Commenter: Hazardous Waste Treatment Council
Issue: General BDAT Aspects
Subissue: Technology as Treatment Standard
Comment:

B. Technology-Specific Methods

EPA, when establishing the method as the BDAT standard, should also specify some operating parameters to ensure that the treatment process is well designed and operated on a routine basis at all locations treating waste. In setting incineration as a method specific standard, there is assurance that the process will be well operated as the Subpart O requirements establish specific process control parameters such as minimum temperatures, CO and combustion gas velocity limits as part of the operating permit that ensure proper operation. However, no other treatment technology has operating parameters established under 40 CFR Parts 264 or 265 that ensure proper operation or treatment performance.

For example, no operating parameters are specified for wet air oxidation or carbon absorption technologies. In setting BDAT standards based on these methods, EPA should specify operating parameters, if no concentration-base standards are being promulgated. These important operating parameters could be identified from the engineering studies in the background documents for the waste codes involved.

Comment Number: 1-M-4 continued
Docket Number: LD12 - 00172
Commenter: Hazardous Waste Treatment Council
Issue: General BDAT Aspects
Subissue: Technology as Treatment Standard
Comment:

As an example, carbon absorption is specified as the method BDAT standard for many wastewaters. Yet there are no operating standards promulgated to ensure that such systems are well operated. How often carbon canisters are regenerated is left up to the operator. Yet it is certain that treatment will not be effective if these canisters are regenerated only once every five years, for example. To avoid such sham treatment, EPA must specify some operating requirements that will provide for proper practice of these technologies. For carbon absorption, EPA could specify a percent reduction in TOC requirement, where the TOC of input streams is compared with that of the output to specify a minimum percent removal criteria. For wet air oxidation, operating temperatures and pressures could be specified. This is only necessary where EPA is not setting concentration based treatment standards. Under the discussion of D001 treatment standards we discuss other options for phase separation/recovery technologies.

Comment Number: 1-M-4
Docket Number: LD12-00172
Commenter: The HWTC
Issue: General BDAT Aspects
Subissue: Technology as Treatment Standard
Response:

The Agency agrees that there is some merit in the commenter's suggestion that operating parameters should be specified. The Agency has modified the descriptions of the required treatment methods in 40 CFR 268.42 to include, whenever possible, operating parameters and detailed descriptions of required treatment trains. While the Agency acknowledges that further work could be done, it has neither the data, the resources, nor the time to further specify operating parameters in the Third Third final rule.

Comment Number: L-M-5
Docket Number: LD12-00179
Commenter: DOW CHEMICAL
Issue: General BDAT Aspects
Subissue: Technology as Treatment Standard
Comment:

XX. EPA SHOULD NOT, UNDER THE LAND DISPOSAL RESTRICTIONS PROGRAM, IMPOSE DETAILED OPERATIONAL REQUIREMENTS ON HAZARDOUS WASTE INCINERATORS.

54 Fed. Reg. 48,403, 48,417, 48,501

In the preamble to the Third Third proposal, EPA has expressed several concerns about air emissions that may result from treatment of wastes using technologies that have been identified as BDAT. *See*, *e.g.*, 54 Fed. Reg. 48,501. In particular, the Agency has expressed concern "whether incineration of brominated organics or organo-nitrogen compounds may adversely affect air quality." 54 Fed. Reg. 48,502. Dow believes that these concerns, to the extent they are valid, are best addressed in the context of the Clean Air Act regulatory program or other aspects of the RCRA program.

EPA asserts that incineration of brominated organics may lead to "the release of toxic bromine gas." 54 Fed. Reg. 48,403. In order to avoid this perceived problem, the Agency has proposed a number of alternative control strategies, including requiring the addition sulfur whenever brominated compounds are burned and limiting the amount of bromine that can be burned in an incinerator. *Id*. These approaches, however, pose substantial implementation problems because, as EPA recognized, "different incinerators have different designs" that may warrant different controls. *Id*. Moreover, addition of sulfur may create new environmental problems such as the release into the air of sulfur dioxide. Dow believes that EPA's concerns can be better addressed through mechanisms other than the land disposal restrictions program.

EPA also expresses concern about the potential nitrogen and sulfur emissions generated from the incineration of organosulfur compounds. According to the Agency, "[t]he formation of nitrogen or sulfur oxides in the process of incinerating any of these compounds may require additional controls in order to meet air quality requirements pursuant to Section 108, 110 and 111 of the Clean Air Act or New Source Review under the CAA's Prevention of Significant Deterioration program." 54 Fed. Reg. 48,417. Given the fact that nitrogen and sulfur oxides are currently regulated under the Clean Air Act, Dow sees no reason why these concerns cannot be addressed under that statute. Indeed, Dow believes that EPA is obliged to use its authority under the Clean Air Act rather than its authority under RCRA Subtitle C. RCRA section 1006(b) explicitly directs EPA to "avoid duplication, to the maximum extent practicable, with the appropriate provisions of the Clean Air Act."

Comment Number: 1-M-5
Docket Number: LD12-00179
Commenter: Dow Chemical
Issue: General BDAT Aspects
Subissue: Technology as Treatment Standard
Response:

The Agency has two concerns with respect to the land disposal restrictions. The first is a cross-media concern about air emissions that occur as a result of waste treatment such as incineration of metal-bearing wastes causing metal emissions to the atmosphere. Another concern is with air emissions from the land disposal of the treatment residue. Air emission control programs are under development using both the CAA and RCRA to address these concerns.

Specific cross-media air emission concerns have been identified for treatment technologies applicable to Third Third wastes, but EPA believes that existing Clean Air Act controls adequately address the potential problems. The amended CAA, if enacted, would also likely address these concerns.

There are several general regulatory development programs under RCRA that address treatment technology air emissions. The Agency has initiated a three-phased program under Section 3004(n) of RCRA to address air emissions from hazardous waste management units other than incinerators. The first phase addresses organic air emissions as a class from process equipment that contact hazardous waste that contain greater than 10 percent organic compounds and from vents on various treatment technologies. The second phase addresses organic air emissions from tanks, containers, and surface impoundments. In the third phase of the Section 3004(n) standards development, the Agency will develop additional standards for the sources addressed in the first two phases as necessary to address residual risks.

None of the regulatory efforts discussed above address air emissions from the land disposal or treatment residue in landfills, land treatment units, or waste piles because the Agency presently presumes that these units will only receive wastes that have been treated to meet the BDAT requirements.

Comment Number: 1-M-6
Docket Number: LD12-00188
Commenter: ENSCO Environmental Systems Company
Issue: General BDAT Aspects
Subissue: Technology as Treatment Standard
Comment:

E) TREATMENT METHODS THAT ARE SPECIFIED AS BDAT.

We believe that EPA must specify "minimum operating parameters" when designating a given treatment technology as the BDAT standard. While specific operating conditions have been established for incinerators (minimum temperatures, combustion gas velocity, etc.) — no similar standards have been set for things like wet air oxidation or carbon absorption. Absent some standards, there are no guarantees that the technology is performing as anticipated.

Comment Number: 1-M-6
Docket Number: LD12-00188
Commenter: ENSCO
Issue: General BDAT Aspects
Subissue: Technology as Treatment Standard
Response:

The Agency agrees that there is some merit in the commenter's suggestion that operating parameters should be specified. The Agency has modified the descriptions of the required treatment methods in 40 CFR 268.42 to include, whenever possible, operating parameters and detailed descriptions of required treatment trains. While the Agency acknowledges that further work could be done, it has neither the data, the resources, nor the time to further specify operating parameters in the Third Third final rule.

Comment Number: 1-N-1
Docket Number: LD12-L00109
Commenter: Freeze Technologies Corporation
Issue: General BDAT Aspects
Subissue: Treatment of Residues
Comment:

Residues that contain the bulk of the original and/or remaining contaminants should continue to be subject to RCRA regulations and the Land Ban rules.

Comment Number: 1-N-1
Docket Number: LD12-L0109
Commenter: Freeze Technologies Corp.
Issue: General BDAT Aspects
Subissue: Treatment of Residues
Response:

When EPA specifies a treatment method as the treatment standard, residues resulting from the required treatment method are no longer prohibited from land disposal unless EPA should otherwise specify. Where EPA has established "Incineration as a Method of Treatment" as a treatment standard for nonwastewaters and/or wastewaters, or where EPA has established "Carbon Adsorption as a Method of Treatment" for wastewaters, the following statements concerning residuals from treatment trains incorporating these technologies are true: 1) Scrubber waters from incinerators in compliance with the substantive provisions of 40 CFR 264 Subpart O or 265 Subpart O are considered to meet the treatment standard and can be land disposed; 2) the scrubber waters from incinerators in compliance with the substantive provision of 40 CFR 264 Subpart O or Part 265 Part O are not required to undergo "Carbon Adsorption as a Method of Treatment" when this specified wastewater treatment method also has been established; 3) incinerator ashes and residues from the subsequent treatment of scrubber waters from incinerators in compliance with the substantive provisions of 40 CFR 264 Subpart O or 265 Subpart O are considered to meet the required "Incineration" treatment standard, and can be land disposed; 4) incinerator equipment derived fro sections of the incinerator that have been directly subjected to the high temperatures of the incinerator that was operated in compliance with the substantive provisions of 40 CFR 264 Subpart O or 265 Subpart O, or are downstream from the high temperature zones, are considered to meet the treatment standards for the wastes that were incinerated and can be land disposed; 5) wastewater effluent and any subsequent nonwastewater treatment residues from carbon adsorption units treating wastewater forms of these wastes are considered to meet the specified treatment standard and can be land disposed; and, 6) where EPA specifies carbon adsorption as the treatment method for wastewaters, spent carbon, as well as any other nonwastewater residues from the wastewater treatment preceding carbon adsorption, are not considered to meet the treatment standard; such spent carbon and nonwastewater residues must be treated by the specified nonwastewater method prior to land disposal.

Comment Number: L N -2
Docket Number: LD12-00179
Commenter: Dow CHEMICAL
Issue: General BDAT Aspects
Subissue: Treatment of Residues
Comment:

XV. TREATMENT OF RESIDUES FROM PREVIOUS DISPOSAL IS NOT NECESSARILY EASIER THAN TREATMENT OF ORIGINALLY LISTED WASTES.

54 Fed. Reg. 48,394 column 1

Dow disagrees with EPA's assertion that residues from previous disposal should be similar to or less difficult to treat than the original listed waste. As explained in the multisource leachate discussion (See Comment XXXIV, page 27), matrix differences within residues from previous disposal mandate a separate set of standards for multisource leachates. Also, requiring that code specific technology standards be applied to multisource leachates is inappropriate, both because the technologies are not generally in place, or are inappropriate, and because of the multiple technologies which could be required.

Comment Number: 1-N-2 continued
Docket Number: LD12-00179
Commenter: Dow Chemical
Issue: General BDAT Aspects
Subissue: Treatment of Residues
Comment:

XXXV. EPA SHOULD CLARIFY THAT SCRAP METAL CONTAMINATED BY A LISTED HAZARDOUS WASTE IS NOT SUBJECT TO REGULATION UNDER THE LAND DISPOSAL RESTRICTIONS PROGRAM IF IT IS TREATED SO THAT IT NO LONGER CONTAINS A LISTED HAZARDOUS WASTE.

54 Fed. Reg. 48,469

In the preamble to the Third Third rule, EPA expresses concern that scrap metals contaminated by listed hazardous wastes may not be able to meet the treatment standards for the listed wastes due to leachable metals in the scrap. 54 Fed. Reg. 48,469. The Agency is therefore considering exempting "scrap metal/listed waste mixtures . . . from BDAT standards associated with the listed wastes for metal contained in the scrap prior to contamination with the listed waste." Id. EPA further states that it "intends to restrict the exemption to scrap metal that (1) has been unavoidably contaminated and (2) has had all listed waste removed by rinsing or other demonstrated decontamination techniques." Id. Finally, EPA states that "contaminated scrap metal [eligible for the exemption] would remain a listed hazardous waste for the purposes of other Subtitle C requirements. In addition, any such scrap metal/listed waste mixture that exhibits a hazardous characteristic (such as EP toxicity) would be subject to the BDAT standards for those characteristic wastes." Id.

Dow, quite frankly, cannot understand why EPA believes that scrap metal poses "[a] particularly difficult problem." Id. Dow finds no logic in the Agency's discussion of that perceived problem. Contaminated scrap metal is generally not listed as a hazardous waste, nor is it hazardous by virtue of the "mixture" or "derived from" rules. If it is subject to Subtitle C regulation at all, that would be because of EPA's so-called "contained in" policy.[1] Under that policy, if a material is treated so that it no longer "contains" a listed hazardous waste, the material is not subject to regulation under Subtitle C -- including land disposal restrictions program. Thus, if, as announced in the Third Third proposal, EPA intends to limit the proposed exemption to scrap metal from which all listed wastes have been removed, such materials are already outside the scope of the RCRA Subtitle C program. Clearly, decontaminated scrap metal is not subject to any treatment standards for the listed hazardous wastes that they previously contained. Moreover, EPA is incorrect when is says that "the contaminated scrap metal [presumably after decontamination] would remain a listed hazardous waste for the purposes of other Subtitle C requirements." 54 Fed. Reg. 48,469.

In any event, Dow requests that EPA clarify in the final rule that the discussion of scrap metal in the proposed rule was not in any way designed to restrict the applicability of the scrap metal exemption in 40 C.F.R. Section 261.6(a)(3)(iv). That exemption clearly provides that scrap metal destined to be recycled is not subject to any Subtitle C regulations, including the land disposal restrictions program.

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[1] Dow notes, however, that the contained in policy, to date, has been applied (and upheld) only in the context of contaminated soils and groundwater.

Comment Number: 1-N-2
Docket Number: LD12-00179
Commenter: Dow Chemical
Issue: General BDAT Aspects
Subissue: Treatment of Residues
Response:

All residues from treating the original listed F, K, U or P wastes are likewise considered to be listed wastes by virtue of the "derived from" rule found in 40 CFR Part 261.3(c)(2). Consequently, all wastes generated in the course of treatment are prohibited from land disposal unless they comply with the treatment standard or are otherwise exempted from the prohibition, such as through a no-migration determination or by a capacity variance. Residues from the treatment of characteristic wastes, however, are not automatically considered the characteristic waste, these residues are considered characteristic if they still display the original characteristic, or if they display another characteristic.

Treatment operations, including those identified as BDAT, typically generate wastewater and nonwastewater residuals that may require further treatment. EPA has not tested every possible waste that may result from every subsequent part of the treatment train. However, since the treatment standards promulgated today are generally based on treatment of a relatively concentrated form of the waste the Agency believes that residues from subsequent treatment are less difficult to treat.

Comment Number: 1-N-3
Docket Number: LD12-00068
Commenter: Institute of Scrap Recycling Industries
Issue: General BDAT Aspects
Subissue: Treatment of Residues
Comment:

The Institute of Scrap Recycling Industries (ISRI) appreciates t opportunity to comment on and present data submissions relevant to EPA proposed land disposal restrictions for third third hazardous waste Because this rulemaking includes all waste material deemed hazardous as result of failing a characteristic test set out under 40 C.F.R. Part 26 Subpart C, ISRI is concerned that, in the future, some residues of t recycling process may be affected. For this reason ISRI is attempting ascertain whether the stabilization methods for metals set out as be demonstrated available technology (BDAT) in the proposal can realistical be used for such residues and whether the proposed treatment standard particularly those for non-wastewater wastes, are achievable.

Comment Number: 1-N-3
Docket Number: LD12-00068
Commenter: Institue of Scrap Recycling INdustries, Inc
Issue: General BDAT Aspects
Subissue: Treatment of Residues
Response:

All residues from treating the original listed F, K, U or P wastes are likewise considered to be listed wastes by virtue of the "derived from" rule found in 40 CFR Part 261.3(c)(2). Consequently, all wastes generated in the course of treatment are prohibited from land disposal unless they comply with the treatment standard or are otherwise exempted from the prohibition, such as through a no-migration determination or by a capacity variance. Residues from the treatment of characteristic wastes, however, are not automatically considered the characteristic waste. These residues are considered characteristic if they still display the original characteristic, or if they display another characteristic. In many cases, the identity of treatability groups will be significant.

Treatment operations, including those identified as BDAT, typically generate wastewater and nonwastewater residuals that may require further treatment. EPA has not tested every possible waste that may result from every subsequent part of the treatment train. However, since the treatment standards promulgated today are generally based on treatment of a relatively concentrated form of the waste the Agency believes that residues from subsequent treatment are less difficult to treat.

Comment Number: 1-0-1
Docket Number: LD12-00117
Commenter: Exide Corporation
Issue: General BDAT Aspects
Subissue: TCLP vs. EP
Comment:

TCLP VS. EP

Exide Corporation has observed that many of EPA's BDAT treatment standards have been written in terms of constituent concentrations in the leachate from the TCLP rather than the EP toxicity test. Exide Corporation questions EPA's authority to develop the land disposal prohibitions in this manner, given that EPA has not issued final regulations to replace the EP with the TCLP.

Comment Number: 1-O-1
Docket Number: LD12-00117
Commenter: Exide Corp.
Issue: General BDAT Aspects
Subissue: TCLP vs. EP
Response:

The Agency is specifying TCLP treatment standards for all "D" metal wastes (where numerical treatment standards are specified). The only exceptions are for D004 (arsenic) and D008 (lead) nonwastewaters, where the EP can be used to demonstrate compliance. For D004, the data base upon which the standard is based was in terms of EP, hence the standard is in terms of EP. For D008, it is not clear that treatment to 5.0 mg/l measured by TCLP is generally achievable.

The toxicity characteristic has also been changed for all "D" wastes to TCLP rather than EP levels (55 FR 11798, 29 March, 1990). Therefore, all regulatory standards require the same extraction procedure toxicity test method, and are now consistent (except D004 as noted above). However, the protocol could be used to measure Part 268 compliance in any case.

Comment Number: 1-0-2

Docket Number: LD12-00155

Commenter: American Electroplaters and Surface Finishers Society

Issue: General BDAT Aspects

Subissue: TCLP vs. EP

Comment:

WASTES THAT ARE HAZARDOUS BY EP TOXICITY CHARACTERISTIC

The agency proposes to regulate D-004 thrugh D-011 sludges and wastewaters to a wide array of standards based on both EP toxicity test and the TCLP. This results in the requirement of analyzing a waste for EP TOXICITY and TCLP. These tests are not inexpensive and for inorganic constituents are similar, yet sufficiently different to cause the necessity of performing both tests to comply with the proposed standards.

We urge the agency to specify all treatment standards for these waste as either EP Toxicity or TCLP and to not promulgate a mix.

Comment Number: 1-O-2
Docket Number: LD12-00155
Commenter: American Electroplaters & Surface Finishers Society
Issue: General BDAT Aspects
Subissue: TCLP vs. EP
Response:

The Agency is specifying TCLP treatment standards for all "D" metal wastes (where numerical treatment standards are specified). The only exceptions are for D004 (arsenic) and D008 (lead) nonwastewaters, where the EP is required. For D004, the data base upon which the standard is based was in terms of EP, hence the standard is in terms of EP. For D008, it is not clear to EPA that D008 wastes are typically treatable to the TCLP characteristic level.

The toxicity characteristic has also been changed for all "D" wastes to TCLP rather than EP levels (55 FR 11798, 29 March, 1990). Therefore, all regulatory standards require the same extraction procedure toxicity test method, and are now consistent (except D004 and D008 as noted above).

Comment Number: 1-0-3
Docket Number: LD12-00164
Commenter: Institute of Chemical Waste Mgmt
Issue: General BDAT Aspects
Subissue: TCLP vs EP
Comment:

EP *vs* TCLP USE IN THE LDR PROGRAM

The Agency is proposing to base standards on EP Tox data when those are the only data available. In those instances, the analytical verification would require use of EP Tox methodology.

There can be no question that the Agency must use whichever data are available to establish standards. However, the ICWM, once again, emphasizes that the Agency must perform valid comparative analyses of the EP Tox and TCLP extraction procedures. Valid verification and comparisons of these extraction procedures for precision and accuracy have never been performed. Once completed, TCLP values must be substituted for EP Tox values within the LDR Program immediately.

Comment Number: 1-O-3
Docket Number: LD12-00164
Commenter: Institute of Chemical Waste Mgmt
Issue: General BDAT Aspects
Subissue: TCLP vs. EP
Response:

The Agency is specifying TCLP treatment standards for all "D" metal wastes (where numerical treatment standards are specified), in part to avoid the types of problems alluded by the commenter. The only exceptions are for D004 (arsenic) and D008 (lead) nonwastewaters, where the EP can be used to demonstrate compliance. For D004, the data base upon which the standard is based was in terms of EP, hence the standard is in terms of EP. For D008, it is not clear that treatment to 5.0 mg/l measured by TCLP is generally achievable.

The toxicity characteristic has also been changed for all "D" wastes to TCLP rather than EP levels (55 FR 11798, 29 March, 1990). Therefore, all regulatory standards require the same extraction procedure toxicity test method, and are now consistent (except D004 as noted above). However, the protocol could be used to measure Part 268 compliance in any case.

Comment Number: 1-0-4
Docket Number: LD12-00179
Commenter: Dow CHEMICAL
Issue: General BDAT Aspects
Subissue: TCLP vs. EP
Comment:

XVII. DEMONSTRATING BDAT BY TOTAL CONSTITUENT ANALYSIS RATHER THAN LEACHATE ANALYSIS.

54 Fed. Reg. 48,397 column 2

Dow encourages the use of "engineering judgments" across all regulatory programs. Although total content analysis has some utility, the actual regulatory level should be based on analysis of the leachate produced by the appropriate extraction procedure (See also Comment XXXIII, page 27). It is only the component of the waste that is actually extractable that is mobile in the environment, and thus should be considered a threat to human health and the environment. Total waste analysis, with application of the dilution factor, is a good way to demonstrate that a waste is below a regulatory threshold, but is not necessarily a good indicator that the leachate will contain more than the regulatory level. Dow frequently uses "engineering judgment," which incorporates different types of analysis, to make waste classification decisions. Dow supports EPA's decision to allow total constituent analysis, corrected for the appropriate dilution factor, to substitute for the more time-consuming and more costly extraction procedure to make waste classification decisions.

Comment Number: 1-O-4
Docket Number: LD12-00179
Commenter: Dow Chemical
Issue: General BDAT Aspects
Subissue: TCLP vs. EP
Response:

This comment is too general to warrant response. EPA notes that the issue of total vs. extraction testing was settled in earlier rulemakings and is not being opened here.

Comment Number: 1-0-5
Docket Number: LD12-00194
Commenter: Rohn and Haas Company
Issue: General BDAT Aspects
Subissue: TCLP vs. EP
Comment:

15. **EPA Should Regulate Only The Metal Constituents In EP Toxic Wastes.**

EPA requests comment on whether it should regulate only the toxic metal constituents in EP toxic waste. See 54 Fed. Reg. at 48,429/2. In our experience, the metal constituents in EP toxic wastes are the constituents of concern. If there are exceptions at CERCLA or corrective action sites, EPA should address these complex contaminated soil and debris wastes by establishing site-specific treatment standards, as EPA currently proposes to do. See 54 Fed. Reg. at 48469/2.

Comment Number: 1-O-5
Docket Number: LD12-00194
Commenter: Rohn and Haas Co.
Issue: General BDAT Aspects
Subissue: TCLP vs. EP
Response:

The Agency is not regulating organic constituents in wastes that are hazardous exclusively because they exhibit EP toxicity for metals

Comment Number: 1-0-6
Docket Number: LD12-00198
Commenter: Department of Energy
Issue: General BDAT Aspects
Subissue: TCLP vs EP
Comment:

9) 54 FR 48432, Use of EP Instead of TCLP under Certain Circumstances.

In some cases the EPA is proposing to allow the EP to be used instead of the TCLP for determining compliance with the treatment standards, such as in the vitrification of arsenic-containing nonwastewaters. EPA has proposed that the EP be used considering that the data available is EP and not TCLP.

Many wastes are combined prior to treatment. Testing to determine compliance with the treatment standards could require application of both tests, which is unnecessarily redundant and a waste of resources. Except for arsenic and selenium nonwastewaters, generators would be required to first test their wastes through the EP test to determine if their waste is hazardous and then through the TCLP to determine whether the waste meets the treatment standard. However, EPA is proposing that wastes containing arsenic and selenium be tested by the EP to determine if a treatment standard has been reached. If wastes contain additional EP Toxic metals, both tests would need to be applied. Such dual testing requirements are of significant cost and confusion, particularly when wastes contain arsenic or selenium as well as other EP metals.

On a broader scale, DOE is concerned about EPA plans to finalize use of the TCLP for the toxicity characteristic. Most of DOE's data for determining whether wastes exhibit the toxicity characteristic is with EP results. DOE has not yet tested the majority of it's waste streams using the TCLP because DOE is concerned about the changes that will be made in the proposed vs. the final TCLP method and the constituents and analytes that will be included in the expanded toxicity characteristic. For this reason, DOE does not plan to conduct TCLP testing on a broad scale until the TCLP is finalized. Numerous waste streams at many facilities will need to be tested, which will require considerable time to complete.

DOE is concerned regarding the period of time that facilities will be allowed to rely on EP results after the TCLP rule is finalized. DOE recommends that EPA establish an effective date for the TCLP rule that provides sufficient time following promulgation, to allow testing to be accomplished.

Comment Number: 1-O-6
Docket Number: LD12-00198
Commenter: Dept. of Energy
Issue: General BDAT Aspects
Subissue: TCLP vs. EP
Response:

The Agency is establishing the TCLP as the means of demonstrating compliance for most characteristic wastes, in major part to avoid the problems noted by the commenter.

Comment Number: 1-P-1

Docket Number: LD12-00126

Commenter: IRECO, Inc.

Issue: General BDAT Aspects

Subissue: Analytical Concerns

Comment:

C. Need For Reactivity Test Methods

As a last comment on this subject, we wish to respond to the Agency's observation that there are no known analytical methods to measure the characteristics for wastes addressed in this section of the proposal. There has long been a need for the Agency to promulgate a set of test methods for explosivity. The second edition of SW-846 suggests certain tests for identifying explosives. These tests, however, are tests that distinguish Class A explosives from blasting agents under the Department of Transportation regulations. The third edition is less specific than the second edition. Recent communications from the Agency indicate that the EPA is considering other tests and we encourage the Agency in its efforts to promulgate tests for reactivity. Although there will be many types of waste that may fall into a potentially explosive classification, the use of a standardized procedure for making a reactivity determination will be of great help in determining what materials should be regarded as hazardous waste.

Comment Number: 1-P-1
Docket Number: LD12-00126
Commenter: IRECO, Inc
Issue: General BDAT Aspects
Subissue: Analytical Concerns
Response:

EPA acknowledges the commenter's support. EPA recognizes that there is a need for analytical methods for measuring reactivity, the Agency is currently working on method development and validation.

Comment Number: 1-P-2
Docket Number: LD12-00172
Commenter: Hazardous Waste Treatment Council
Issue: General BDAT Aspects
Subissue: Analytical Concerns
Comment:

The HWTC Analytical Subcommittee that worked on the interlaboratory study have comments on two other issues identified in the proposed rule: availability of methods, and availability of calibration standards.

The HWTC feels that any method used to analyze a constituent for compliance with any regulatory limit must be properly developed, validated and incorporated into written procedures approved by EPA. If enforcement of these regulatory limits is to be effective, the methods used to determine compliance must be well developed, validated and promulgated as part of EPA approved methodology in order to be technically defensible in court. Therefore any methods used for analysis of treatment residuals must be based on SW846 methods, or other EPA approved methods such as the APHA "Standard Methods for the Examination of Water and Wastewater". Not only is this necessary for enforcement proceedings, but is also important in preventing a gaping loophole in the Part 268 standards where any method not properly developed or executed is used to show compliance, where compliance has really not been achieved. A poorly responding method, not based on SW846, could be used to argue compliance for example.

Comment Number: 1-P-2 continued
Docket Number: LD12-00172
Commenter: Hazardous Waste Treatment Council
Issue: General BDAT Aspects
Subissue: Analytical Concerns
Comment:

If no EPA approved method exists that has been properly validated, then no concentration based treatment standard can be set for that constituent since it is not analyzable for compliance purposes. In such a case, either a specified treatment methodology standard should be set, a surrogate compound specified as a standard if an EPA method exists, or the other regulated constituents for which treatment standards have been set can serve as indicators of performance. A good example is the methanol standard in F001- F005 waste. No EPA method exists for methanol and all laboratories are having difficulty in detecting methanol in incinerator ash at the levels of regulatory concern. This was confirmed by the HWTC PQL study. EPA should therefore withdraw and reserve the standard for methanol until a suitable method is developed and properly validated. We understand that EPA's Methods Branch is currently researching this problem recognized by the Agency. Reserving the methanol standard in F001-F005 waste will cause no environmental risk, as there are 24 other BDAT constituents set as treatment standards for this waste that can serve as indicators of incinerator performance, and the effectiveness of treatment. In fact, in the original BDAT development work done for F001-F005, the methanol standard was based on analysis of methyl ethyl ketone, not on methanol. If the other 24 BDAT constituents are destroyed to the required concentration based BDAT levels, then methanol has also surely been destroyed to the maximum extent achievable by BDAT.

Comment Number: 1-P-2 continued
Docket Number: LD12-00172
Commenter: Hazardous Waste Treatment Council
Issue: General BDAT Aspects
Subissue: Analytical Concerns
Comment:

Finally we strongly disagree with the statement made in the preamble to the third-thirds proposed rule on page 48388, concerning SW846 not requiring that calibration standards be available for every compound analyzed. Every SW846 method requires the use of a calibration standard. Further, for the compounds in question here, no alternative surrogate has been offered by EPA in SW846 or in any other publication. Therefore, the lack of calibration standards for the above named compounds is cause for not promulgating numeric - concentration based treatment standards for these constituents.

Likewise, several problematic constituents are discussed in the HWTC interlaboratory study - Tables 1.0 and 2.0 in Section V of the Report - for which reliable analytical methods are not available. These problematic constituents include water soluble constituents like alcohols, 1,4-dioxane, acrolein, cyclohexanone, and acetonitrile. Also unstable constituents like 3-chloro-1-propane, benzenethiol, maleic anhydride, and hexachlorocyclopentadiene, also present methodology problems. Finally, certain constituents like resorcinol, trans-1,4-dichloro-2-butene, 2-nitropropane, aniline, 4-amino biphenyl, benzidines, hexachlorophene, maleic anhydride, methapyrilene, 3-methylchloanthene, N-nitrosodimethylamine, pentachloronitrobenzene, and tris(2,3-dibromopropyl) phosphate chromatograph poorly and are virtually impossible to analyze on a reliable basis. This has also been supported by other EPA studies described in the discussion sections of the HWTC interlaboratory study. For these constituents concentration based treatment standards should not be set, only technology specific standards should be set, such as incineration.

Comment Number: 1-P-2 continued
Docket Number: LD12-00172
Commenter: Hazardous Waste Treatment Council
Issue: General BDAT Aspects
Subissue: Analytical Concerns
Comment:

Calibration is important to ensuring that the measurements being made are correct, and calibration standards must be available readily. HWTC agrees with EPA that difficulties in obtaining standards and in verifying purity of standards is sufficient cause not to establish concentration based on treatment standards.

In the course of performing the interlaboratory study on incinerator ash, the HWTC member companies ran into problems obtaining the following standards:

Benzo(a)pyrene — U022
Benzo(g,h,i)perylene —
Benzo(k)fluoranthene —
1,2-7,8-Dibenzo(a,i)pyrene —
2-Chloro-1,3-Butadiene —

These standards could not even be provided by EPA-RTP or EMSL, who provided all of the other traceable standards for the interlaboratory study. Some of these standards are extremely costly, in excess of $4000 for the quantities needed for calibration. For these compounds, HWTC member companies feel that concentration based BDAT standards must not be set, only technology specific BDAT standards are practical or some other surrogate standard should be set.

Comment Number: 1-P-2
Docket Number: LD12-00172
Commenter: The HWTC
Issue: General BDAT Aspects
Subissue: Analytical Concerns
Response:

The Agency agrees with The HWTC that properly developed and validated analytical methods should be used to analyze the constituents regulated in the Third Third rule. EPA has evaluated the analytical data used to calculate the treatment standards for each constituent for each regulated waste code under the Third Third rule. EPA has not set any concentration based standards for constituents that it believes cannot be analyzed by EPA methods

The commenter has specifically noted difficulties in analyzing methanol in incinerated ash. EPA agrees that methanol poses significant analytical difficulties and consequently promulgated method of treatment as standard for methanol in the final rule. Issues dealing with F002-F005 were addressed during the comment period for the solvent rule on November 1986.

Regarding the calibration issue, the Agency wants to point out that before promulgating a concentration based standard for any constituent, EPA has verified that a calibration standard is commercially available. Although, every SW-846 method requires several calibration standards, it does not require a separate calibration standard for each and every analyte quantified. EPA chooses to avoid the use of surrogates and not set concentration based treatment standards unless calibratiuon standards are commercially available for that analyte.

Analytical standards are commercially available for benzo(a)pyrene, benzo(g,h,i)perylene, and benzo(k)fluoranthene. Therefore, EPA will promulgate concentration-based treatment standards for these three constituents. For 2-chloro-1,3-butadiene, the commenter states that a commercial standard was unavailable. The Agency agrees and has promulgated a treatment method for this waste. (Therefore, there is no requirement to analyze for this constituent and no need to obtain this commercial analytical standards.)

For 1,2,7,8-dibenzo(a,i)pyrene, the Agency recognizes that there are analytical problems analyzing this constituent, therefore, the Agency is promulgating a treatment method. As a result, there is no requirement to analyze for this constituent and no need to obtain this commercial analytical standard.

Comment Number: 1-P-2 (Continuation)
Docket Number: LD12-00172
Commenter: The HWTC
Issue: General BDAT Aspects
Subissue: Analytical Concerns
Response:

EPA agrees with the commenter that there are analytic roblems associated with the following constituents:

- Acrolein
- Cyclohexanone
- Acetonitrile
- Benzenethiol
- Maleic anhydride
- Hexachlorophene
- Tris(2,3-dibromopropyl) phosphate
- Hexachlor yclopentadiene
- Trans-1,4- chloro-2-butene
- Resorcino
- 2-nitropro e
- Benzidine
- N-nitrosoc ethylamine
- 4-amino b enyl

Therefore, EPA believes that the above listed constitue cannot be analyzed and will promulgate treatment methods for the nonwastewater form these U and P wastes.

The Agency is promulgating concentration-based stand ls for the nonwastewater forms of the following U and P wastes:

- 1,4-dioxane
- Aniline
- Methapyrilene
- 3-methylcl anthene
- Pentachlor itrobenzene

It should be noted that 3-chloro-1-propane is not part of BDAT list, however 3-chloro-1-propene (3-chloropropene) is part of the BDAT t and has a numerical concentration-based standard.

Comment Number: 1-P-3

Docket Number: LD12-00188

Commenter: ENSCO Environmental Systems Company

Issue: General BDAT Aspects

Subissue: Analytical Concerns

Comment:

D) LACK OF EFFECTIVE ANALYTICAL METHODS TO DEMONSTRATE COMPLIANCE WITH CERTAIN BDAT STANDARDS

ENSCO is one of the six firms that participated in the recently completed "Interlaboratory Study" (submitted December 22, 1989) assessing the "method detection limits" and "practical quantitation limits" for incineration ash matrices. The study, which was conducted in cooperation with the EPA Methods Branch, assessed the ability of EPA-approved SW-846 analytical methods to measure compliance with BDAT standards.

At least insofar as incineration ash is concerned, the study indicated that the "practical quantitation level" was often higher than the BDAT treatment standard. This finding poses obvious BDAT compliance and certification problems, since it means that even well-run laboratories using EPA-approved analytical procedures cannot reliably measure down to BDAT standards when measuring certain constituents in incineration ash.

As indicated in the study, we believe that this situation results from physical factors affecting incineration ash — including the absorptive effects of activated carbon and silicates and the large active surface areas of the ash. Since EPA has not yet established PQL's for waste matrices, we believe that these factors have not previously been taken into account.

We would like to emphasize that while high-temperature incineration may actually reduce these constituents to levels well below the BDAT level, it is not possible using currently approved analytical techniques to consistently prove that this is true. (By the same token, it is impossible to reliably prove that BDAT levels have been exceeded).

Given the significance of these findings and the major investment of time and money in this study by both the participating companies and by EPA, we urge the Agency make appropriate adjustments to the final "Third Thirds" rule.

Comment Number: 1-P-3
Docket Number: LD12-00188
Commenter: ENSCO
Issue: General BDAT Aspects
Subissue: Analytical Concerns
Response:

BDAT concentration-based standards are calculated so they will exceed the levels at which the compounds are found in waste treatment residue. Very often, especially for incinerator ash, these levels are the detection limits of the analytical system. However, all BDAT standards exceed these detection limits, so EPA does not regulate anything below levels proven achievable by analytical laboratories.

The Agency has used the method detection limit study submitted by the HWTC to the Agency to evaluate whether industry's laboratories can reliably quantify regulated constituents at the level of both the proposed and previously promulgated concentration-based standards established for P and U wastes. EPA did not reevaluate any treatment standards promulgated in the First and Second Thirds Rule or Solvent Rule. These concentration-based standards are based on incineration ash data from 14 incineration studies conducted by the Agency, specifically, for the Land Disposal Restrictions Program. EPA also states that PQLs are minimum measures of analytical laboratory performance, as defined in SW-846, for the use of laboratories in assessing their own performance in terms of success in reaching low levels of certain analytes in certain matrices. Outside of this function of providing a quantitative definition of the boundaries between poor and competent analytical performance PQLs have no regulatory power.

Although HWTC did conduct a comprehensive method detection limit study for most of the BDAT constituents regulated in the Third Thirds Rule as well as the First and Second Third Rules, the following items were not presented in the documentation, thereby limiting the usefulness of the study:

- Although the six laboratories analyzed seven replicates to determine the method detection limits, data were only presented for the average from all of the data points submitted by the individual laboratories. As a result, EPA could not evaluate the precision each individual laboratory achieved for determining the detection limits nor could the range of detection limits associated with each set of replicates be examined. (For example, one laboratory misfunctioning could significantly increase the average presented.) Therefore, EPA could not compare the precision of the HWTC data relative to EPA's and as a result could not assess HWTC's comments concerning detection limit precision.

Comment Number: 1-P-3
Docket Number: LD12-00188
Commenter: ENSCO
Issue: General BDAT Aspects
Subissue: Analytical Concerns
Response: (Continuation)

- Characterization data for the untreated waste that was used to generate the incinerator ash used by a laboratory participating in this study were not available. As a result, EPA could not assess the incinerator burns to determine whether substantial treatment of the waste occurred or whether the ash was obtained from a waste that is more or less characteristic of the waste in question than the ash EPA analyzed to set its standards on.

- The measurable levels of both volatile and semivolatile organic constituents present in the unspiked ash suggest inadequate incinerator time or temperature and thus the ash may have been generated from incinerators that were not well-operated or well-designed. The presence of these volatile and semivolatile constituents at measurable quantities in the unspiked ash may also indicate that additional matrix dependent interferences may have been present in the samples used for this study by some of the participating laboratories.

- Incinerator process documentation provided in the study was inadequate to assess whether the incinerators used to generate the ash were well-designed and operated. HWTC did provide primary and secondary chamber combustion temperatures, combustion chamber carbon monoxide content, combustion gas velocity, feed rate, halogen content, and ash content in the HWTC comment submitted in response to the November 22, 1989 proposed standards. The names and addresses of the incinerators generating the ash used in HWTC's study were also given. Some of them were used in several of EPA's own 14 test burns. The six incinerators participating in this study were identified as five rotary kiln incinerators and one multiple hearth incinerator. The limited process data available in the report were presented as ranges plus averages. No data on length of burn, graph charts recording the operating parameters during the incineration burns, or flow sheets of the incineration system were given. In addition, no information was provided on either the sampling point where the ash was collected or the sampling procedures used to collect the ash samples; therefore, EPA could not compare these data with the data collected from the 14 test burns conducted by EPA.

EPA did use the HWTC study to reevaluate the standards that were proposed in the Third Third Rule for U and P nonwastewaters and multi-source leachate nonwastewaters. EPA did not review any standards that were not in the Third Third Rule, specifically, those that were promulgated in the First, Second, and Solvent Rules. Changes occurred

Comment Number: 1-P-3
Docket Number: LD12-00188
Commenter: ENSCO
Issue: General BDAT Aspects
Subissue: Analytical Concerns
Response: (Continuation)

primarily when EPA reevaluated cases where the HWTC study reported higher detection limits than those used by EPA to calculate standards. Although EPA had generally used the highest of the set of up to 14 incineration ash detection limits from the Agency's own studies as the basis of the proposed standards, some exceptions were made in the case of outliers and where EPA believed a particular raw waste matrix best represented the waste code in question. In reviewing the HWTC study information, EPA reexamined those exceptions where the detection limit fell significantly below HWTC's reported detection limits.

Comment Number: 1-P-4
Docket Number: LD12-000109
Commenter: Freeze Technologies Corporation
Issue: General BDAT Aspects
Subissue: Technology as Treatment Standard
Comment:

~~In~~ the proposed rule, there are numerous instances where the EPA is establishing a treatment method because it considers that ".. the agency has no means of calculating valid concentration-based standards that can be used for compliance monitoring" (e.g. U016, U055, U056, U064, U094, U186, U240) or "..the regulated compound is unstable in water" (e.g. P016, P017, P023, P095, U006, U017, U033, U034, U041, U042, U046, U156, U222).

We believe this approach is unjustified and unnecesary for the following reasons:

1. ANALYTICAL COMPLICATIONS

   Complications in performing analytical monitoring may exist in wastewaters (by definition less than 1% organics and 1% suspended solids). Such complications would also exist in concentrated or precipitated residues. However, in treated wastewaters the problems should be minimal if at all existant. In the low concentrations in a treated water residual, an on-line analyzer specific to the desired compound can be used for continuous analysis.

2. COMPOUND INSTABILITY IN WATER

   In the case of materials that are unstable in water, they will all leave a tracer chemical that can be analyzed (i.e., bromide, phosphate or another anion or a metal cation).

In addition to the above objections regarding rationale for using method-definite BDAT, the logic in the technologies chosen for wastewater treatment (wet-air, chemical or biological oxidation followed by actived carbon adsorption) is questionable. Specifically, none of these oxidation steps will fully oxidize many of the priority pollutants in the listed wastes, which is the reason that activated carbon is added to polish the effluent. There is also no guarantee that the process train will be operated properly to meet any kind of effluent standard. In fact, many of the by-products of oxidation are low molecular-weight oxygenated organics that substantially decrease the capacity of activated EPA carbon for the more noxious compounds that make the waste hazardous in the first place.

1. The EPA should provide specific treatment (quality) standards for all wastes, as opposed to specific methods.

2. Where treatment methods are used in place, a mechanism needs to be found that allows 'or equal' treatment without requiring a change in the BDAT designation by the Agency.

Comment Number: 1-P-4
Docket Number: LD12-00109
Commenter: Freeeze Technologies Corp.
Issue: General BDAT Aspects
Subissue: Technology as Treatment Standard
Response:

EPA believes there is insufficient data for regulating these P and U constituents with concentration-based standards, nor additional data were supplied during the public comments period, therefore, EPA is not promulgating concentration-based standards for the P and U wastes listed by the commenter.

Not all bromides, phosphates, anions or metal cations are hazardous, the Agency does not have analytical methods that can analyze for all those cases, therefore EPA does not plan on promulgating concentration-based standards for these situations.

In general, when the Agency believes that approved analytical methods do not exist for a waste or when there is a lack of sufficient data, the Agency does not promulgate concentration-based standards for such wastes. Instead, the Agency promulgates as the trreatment standard required treatment methods standards which the Agency believes perform best to reduce or to eliminate the hazardous constituent concentration in the wastes.

According to 40 CFR 268.42(b) any person may submit information to the Agency demonstrating that an alternative treatment method can achieve a level of performance equivalent to that achieved by promulgated treatment technology standards.

Comment Number: 1-Q-1

Docket Number: LD12-00029

Commenter: AMERICAN CHEMICAL SOCIETY

Issue: GENERAL BDAT ASPECTS

Subissue: TREATMENT STANDARDS FOR CHARACTERISTIC WASTES

Comment:

Section III.A.5 - Proposed Treatment Standards for Metal Wastes

While treatment is available for numerous hazardous wastes, the Society is concerned about the disposal of volatile metals. There are no simple, reasonable techniques for the recovery or recycling of many of the various compounds of volatile metals. The majority of laboratory reagents and other wastes are suitable for incineration, but volatile substances such as mercury, selenium, osmium, and beryllium and their compounds cannot be incinerated. A combination of regulatory requirements under the Clean Air Act and the concerns of incinerator operators make it inadvisable to incinerate these substances. Scrubbers are designed to collect particulates, not to collect vapors emitted from the incineration of volatile metals and their compounds. For these reasons, commercial incinerators do not accept these materials for disposal. Other than secure landfilling, there currently are no other technologies available for the safe disposal of these materials. The Society encourages EPA to pursue vigorously a research program on characterization and disposal methods for volatile metals and strongly supports a two-year national capacity variance to allow for the development of additional disposal methods for volatile metals and their related compounds.

Comment Number: 1-Q-1
Docket Number: LD12-00029
Commenter: American Chemical Society
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Response:

There are several general regulatory development programs under RCRA that address treatment technology air emissions. The Agency has initiated a three-phased program under Section 3004(n) of RCRA to address air emissions from hazardous waste management units other than incinerators. The first phase addresses organic air emissions as a class from two types of emission sources. The first source category is process equipment (pumps, valves, etc) that contact hazardous waste that contain greater than 10 percent organic compounds, including such as distillation units and incinerators. The second source category is certain vents on various treatment technologies, such as air or steam strippers. These standards were proposed in the Federal Register on February 5, 1987 and are expected to be promulgated this spring.

The second phase of standards development under Section 3004(n) of RCRA addresses organic air emissions as a class from tanks, containers, and surface impoundments. Treatment technologies that occur in tanks or containers that are not controlled by the Phase I standards would be controlled by these standards. Wastes that would be prohibited from land disposal may continue to be managed in a surface impoundment as long as the treatment residuals that do not meet the applicable treatment standards are removed from the impoundment within one year of entry into the impoundment. These standards will control air emissions from the management of wastes in the surface impoundment. These standards are expected to be proposed by EPA during the Spring 1990.

In the third phase of the Section 3004(n) standards development, the Agency will develop additional standards for the sources addressed in the first two phases as necessary to address residual risks.

In addition to the Section 3004(n) standards, general standards to control both organic and metal emissions from the combustion of hazardous wastes in incinerators and other types of combustion devices are under various stages of development. The amended Clean Air Act (if enacted) would impose further controls.

Comment Number: 1-Q-2
Docket Number: LD12-00089
Commenter: Mill Service, Inc.
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Comment:

In establishing certain metal waste treatment standards, we believe that EPA has not been consistent in its reasoning as to the basis for the proposed levels. For example, one of the proposed non-wastewater standards for cadmium wastes is 0.14 mg/l based on the transfer of K061 data. EPA believes that K061 represents a particularly difficult waste to stabilize and therefore a reasonable basis by which to set the cadmium waste treatment standard. However, the proposed wastewater standard for cadmium wastes, 0.20 mg/l, has been based on the transfer of data from the Effluent Guidelines Program due to a lack of data on the treatment of cadmium in RCRA D006 wastewaters. Yet K061, F006 and K069 wastewaters have cadmium treatment standards of 1.6 mg/l. Using the same reasoning as in the non-wastewater cadmium standard, a 1.6 mg/l standard would appear to be more appropriate and representative of difficult to treat wastes containing cadmium. Similar discrepancies exist in the treatment standards for chromium non-wastewaters (0.094 mg/l for D007; 5.2 mg/l for K006 and F019) and lead wastewaters (0.040 mg/l for D008; 3.4 mg/l for K002) and potentially others. EPA should maintain a consistent approach in establishing the metal waste treatment standards based on the most difficult waste treatability data available.

Comment Number: 1-Q-2
Docket Number: LD12-00089
Commenter: Mill Service, Inc
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Response:

In the November 22, 1989, notice, the Agency proposed treatment standards based on the performance of best demonstrated available technology without regard to the characteristic level. The Agency is today promulgating treatment standards for the characteristic wastes based on the performance of technology as proposed; however, the individual treatment standards have been revised to reflect data submitted during the comment period, which showed wide variability in the wastestreams and an inability to consistently achieve the proposed treatment standards. EPA also is not transferring data from listed wastes to characteristics wastes. Therefore, the treatment standards for the characteristic wastes take one of two forms: (1) a concentration level equal to or greater than the characteristic level ; or (2) a specified treatment technology.

Comment Number: 1-Q-3
Docket Number: LD12 - 00094
Commenter: Tricil Environmental Services Inc.
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Comment:

2. U.S. EPA's simplification of waste matrixes and failure to acknowledge real world treatability problems has lead U.S. EPA to propose unrealistic limits.

   The data bases that U.S. EPA has used in proposing its BDAT limits for the various E.P. Toxic metals appear to ignore the complex nature of many waste streams. For example, U.S. EPA's proposals appear to ignore;

   a. the presence of complexing ions such as phosphates, tartrates, ethylenediaminetetraacetic acid (EDTA) and ammonia that are commonly found in cleaner and plating formulations, and

   b. the existence of multi-metal waste streams and the amphoteric nature of several of E.P. toxic metals.

It is TESI's goal to render all waste it receives non-hazardous. Consequently, all potential waste streams go through prequalification and treatability testing. TESI regularly rejects potential waste streams as untreatable due to the presence of one or more of the complexing agents previously described, the amphoteric nature of metal contaminants or the high concentration of one or more metal contaminants. Several of the E.P. Toxic metals are amphoteric. This, combined with the fact that many waste streams contain several metals, each of which precipitates best at a slightly different pH, makes waste treatment less than ideal. Certainly, the BDAT limits proposed by U.S. EPA are achievable for relatively clean wastes. However, the BDAT limits may not be met when treating fairly common characteristic wastes containing mixtures of various soluble metals, complexing agents and other contaminants. Thus TESI strongly urges U.S. EPA to establish BDAT for characteristic wastes at the hazardous level.

Comment Number: 1-Q-3

Docket Number: LD12-00094

Commenter: Tricil Environmental Services, Inc

Issue: General BDAT Aspects

Subissue: Treatment Standards for Characteristic Wastes

Response:

In the November 22, 1989, notice, the Agency proposed treatment standards based on the performance of best demonstrated available technology without regard to the characteristic level. The Agency is today promulgating treatment standards for the characteristic wastes based on the performance of technology as proposed; however, the individual treatment standards have been revised to reflect data submitted during the comment period, which showed wide variability in the wastestreams and an inability to consistently achieve the proposed treatment standards. EPA also is not transferring standards to characteristics from other waste codes. Therefore, the treatment standards for the characteristic wastes take one of two forms: (1) a concentration level equal to or greater than the characteristic level ; or (2) a specified treatment technology.

Comment Number: 1-Q-4

Docket Number: LD12-00105

Commenter: American Chrome & Chemicals Inc.

Issue: General BDAT Aspects

Subissue: Treatment Standards for Characteristic Wastes

Comment:

We do not believe that the transfer of a treatment standard for a listed waste to a characteristic waste is generally justified. A listed waste is usually well defined both physically and chemically. Treatment methods can consequently be well defined, standardized and optimized for the particular waste. It is unlikely, however, that the same method can be used with identical results on a different waste. For characteristic wastes which show a large amount of variability it is even more difficult to predict treatment performance in every instance. Therefore, the average treatment level must be considerably lower to prevent any single grab sample from being over whatever limit is set.

Comment Number: 1-Q-4
Docket Number: LD12-00105
Commenter: American Chrome & Chemicals Inc
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Response:

The Agency recognizes the variability and wide diversity of characteristic wastes. In the November 22, 1989, notice, the Agency proposed treatment standards based on the performance of best demonstrated available technology based on the data available to the Agency at that time. The Agency is today promulgating treatment standards for the characteristic wastes based on the performance of technology as proposed; however, the individual treatment standards have been revised to reflect data submitted during the comment period, which showed wide variability in the wastestreams and an inability to consistently achieve the proposed treatment standards. EPA also is not transferring standards to characteristics from other waste codes. Therefore, the treatment standards for the characteristic wastes take one of two forms: (1) a concentration level equal to or greater than the characteristic level ; or (2) a specified treatment technology.

Comment Number: 1-Q-5
Docket Number: LD12-L00109
Commenter: Freeze Technologies Corporation
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Comment:

Freeze Technologies would also like to see treated wastewater standards for all listed and characteristic wastes. Where these are met the rules should allow for 'delisting by rule' so that the water can be reused or discharged. The discharge would require an NPDES permit, with health-based standards that would protect public health and the environment.

Comment Number: 1-Q-5
Docket Number: LD12-L0109
Commenter: Freeze Technologies Corp
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Response:

In situations where wastes subject to concentration-based standards are mixed with wastes subject to treatment standards expressed as a method, the mixture must be treated by the specified method and must also meet the concentration-based treatment standards for any other prohibited waste contained in the matrix.

Comment Number: 1-Q-6
Docket Number: LD12-00129
Commenter: Olin Chemicals
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Comment:

The Agency is proposing that treatment residues from characteristic wastes must meet all characteristic treatment standards prior to land disposal. Is it the Agency's intent that wastes be tested for all characteristic properties and components? If so, this makes little sense and adds a significant burden to both the generator and the disposal facility. If the treatment is for corrosive or inorganic metal waste, there is no sense in testing either for ignitability or for the organic constituents contained in 40 CFR 261.24. There is currently a USEPA proposal to expand this list from 6 organics to approximately 35. This represents an undue burden of time and expense on both the generator and disposal facility.

The same is true for characteristic organics which are treated. It is unnecessary to test for the inorganic properties (corrosivity) as well as metals if none or a small amount were in the original waste stream.

Olin proposes that instead of the blanket statement requiring testing for "all characteristic treatment standards," USEPA substitutes the following:

" Characteristic wastes and residues from treatment of characteristic wastes must be treated to meet the treatment standard for its hazardous characteristic as well as for any other potential hazardous characteristics."

Comment Number: 1-Q-6
Docket Number: LD12-00129
Commenter: Olin Chemicals
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Response:

The use of a specified treatment method for a particular characteristic waste does not necessarily ensure that the residues from this treatment are no longer a characteristic hazardous waste. In other words, treatment for a given characteristic may not completely satisfy the requirements to treat other characteristics in the waste or any new characteristic appearing in the treatment residue. The Agency, therefore, is requiring that no characteristic wastes or their treatment residues may be land disposed unless the treatment standard for the particular characteristic has been meet or the residues have complied with the applicable specified method.

The Agency agrees, however, that testing for all characteristic treatment standards may not be necessary, and that narrowing the testing to potential hazardous characteristics is reasonable. The facility's waste analysis plan may be modified to reflect an approach such as that suggested by the commenter.

Comment Number: 1-Q-7
Docket Number: LD12-00159
Commenter: Waste Mgmt., Inc + Chemical Waste Mgmt, Inc.
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Comment:

Standards Requiring Use of Particular Technologies

EPA has established several treatment standards that use a particular technology. Unfortunately, the specified technologies are not suitable for the myriad of mixtures that may exhibit the characteristic in question. One example of a waste presenting this problem is an alkaline waste that is a D002 corrosive liquid, but which also contains chelated metals. The only way to treat the metals effectively in these wastes is to incinerate the waste and stabilize the ash. The treatment standard for D002 waste, however, is neutralization, which is inappropriate for this type of waste. The Agency should either amend the treatment standard for characteristic wastes to allow for incineration, or, as an alternative, make clear that a characteristic waste that is being incinerated is not "destined for land disposal" and that, therefore, the treatment standards do not apply unless the residue from the incinerated waste displays a characteristic. The Agency could make this determination because incineration is a method of treatment that is an alternative to land disposal.

Comment Number: 1-Q-7
Docket Number: LD12-00159
Commenter: Waste Mgmt Inc. /Chem. Waste Mgmt
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Response:

The Agency is promulgating revised treatment standards for the characteristic wastes. Please refer to the specific background documents for the various characteristic wastes. These documents can be found in the docket for the Third Third wastes. However, the problem alluded to by the commenter should not exist under the altered standards.

Comment Number: 1-Q-8
Docket Number: LD12-00164
Commenter: Institute of Chemical Waste Mgmt
Issue: General BDAT Aspects
Subissue: Treatment Standards for Treatability Groups
Comment:

TREATMENT STANDARDS FOR CHARACTERISTIC WASTES

The Agency is proposing two options for establishing standards for characteristic wastes. The first is to set standards based on the technological achievability (BDAT). The second option uses the EP Tox standards (the characteristic thresholds) as the LDR treatment level.

The ICWM believes that characteristic wastes should be treated to levels that are based on BDAT. In those cases where the BDAT standards are at or below the characteristic thresholds, compliance with the standards should make the treated waste eligible for placement in a Subtitle D landfill.

Comment Number: 1-Q-8
Docket Number: LD12-00164
Commenter: Institute of Chem. Waste Mgmt
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Response:

In the November 22, 1989, notice, the Agency proposed treatment standards based on the performance of best demonstrated available technology without regard to the characteristic level. The Agency is today promulgating treatment standards for the characteristic wastes based on the performance of technology as proposed; however, the individual treatment standards have been revised to reflect data submitted during the comment period, which showed wide variability in the wastestreams and an inability to consistently achieve the proposed treatment standards. EPA also is not transferring standards to characteristics from other waste codes. Therefore, the treatment standards for the characteristic wastes take one of two forms: (1) a concentration level equal to or greater than the characteristic level ; or (2) a specified treatment technology.

Comment Number: 1-Q-9
Docket Number: LD 12-00172
Commenter: Hazardous Waste Treatment Cauncil
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Comment:

Cross Applicability Of D-Code Metal BDAT Standards

As indicated in our comments submitted on the individual D-code metals (i.e. D004-D011) BDAT standards, HWTC believes that EPA should set standards for these wastes based upon currently available stabilization technologies instead of relying on unavailable technologies (i.e., vitrification or metals recovery) which will delay the effective date of regulation for at least two years under a national variance or possibly four years if case-by-case extensions are granted.

HWTC has submitted data which indicate that the D-code metal waste for which alternate treatments were proposed (i.e., arsenic, barium, selenium, mercury) can be treated effectively using stabilization technologies. We suggest EPA issue BDAT treatment standards for all of these wastes under § 268.41 based upon the TCLP test as measurement of effective stabilization.

Further, EPA should present these treatment standards in a matrix form where each treatment standards applies to every D-code metal waste (i.e., the BDAT for lead would apply to the waste which is D004 for arsenic). The treatability data submitted by HWTC indicates that many D-code metal wastes contain significant quantities of other metals which may not trigger the E.P. Toxic characteristic.

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Comment Number: 1-Q-9 continued
Docket Number: LD12-00172
Commenter: Hazardous Waste Treatment Council
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Comment:

This approach would be similar to the approach taken for F006. F006 is regulated for five different metals as well as two forms of cyanide although few, if any, individual F006 waste streams contain all of these constituents. The measurement of this standard would be easy for the regulated community because the addition of other metal parameters in the analysis process is neither disruptive nor expensive.

EPA has many times in the past regulated additional constituents beyond those which cause the waste to be hazardous. HWTC urges EPA to consider the wisdom of extending that practice to the current regulation.

Comment Number: 1-Q-9
Docket Number: LD12-00172
Commenter: The HWTC
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Response:

The Agency appreciates the data submittal from the HWTC. With respect to arsenic, selenium, barium and mercury wastes, EPA does not believe that adequate proof exists that stabilization is adequate for all forms of these "D" nonwastewaters. Hence EPA has based numerical standards for these wastes on a variety of other technologies, including, in some cases, stabilization. A generator may however meet the numerical requirements with any treatment technology, or combination of technologies that he chooses, including stabilization.

For each of these "D" nonwastewaters the TCLP test is the required test, except for arsenic (D004) and lead (D008). For arsenic and lead, the only qualified data, available to the Agency with which to set standards was EP treatment data, hence the numerical standards for these waste codes are based on EP test.

With respect to regulating all metals in each of the "D" metal wastes, the Agency fails to see the need. If a "D" waste is successfully treated for the metal of concern, but still exhibits another "D" characteristic, then it must also be treated for the additional "D" metal.

It may be that the commenter's approach might ultimately be fruitful, but it is not a step EPA is presently prepared to take, due to the enormous constraints posed by the hard hammer, absence of data and absence of prior notice. The commenter itself, in another part of its comments noted that this rule was not the right time to try to regulate all toxic constituents potentially present in characteristic wastes.

Comment Number: 1-Q-10

Docket Number: LD12-00198

Commenter: Department of Energy

Issue: General BDAT Aspects

Subissue: Treatment Standards for Characteristic Wastes

Comment:

17) 54 FR 48490, Treatment Standards for Characteristic Wastes--Treatment Below Characteristic Levels.

EPA is proposing standards for certain characteristic wastes which require treatment below the characteristic levels. EPA is soliciting several types of comments on this issue. DOE firmly believes that establishment of such standards below the characteristic level is in opposition to the intent of Congress, is beyond EPA's statutory authority, and is incongruous with the manner in which the RCRA program has been operating since it's initial promulgation. Up until the Third Third proposal, a characteristic waste was not considered a hazardous waste and not subject to RCRA Subtitle C requirements, once the characteristic was removed.

EPA states that it has always maintained that EP toxicant concentrations are levels at which wastes clearly present a substantial hazard, but that lower levels may also pose a hazard. However, historically, EPA has only considered levels below characteristic levels for constituents contained in listed hazardous wastes and where delisting is sought. In such cases, other factors, including volume of waste, are used to determine if levels lower than the characteristic are of concern.

EPA also points to clean closures, where removal of constituents below characteristic levels is required. However, it is also important to point out that the definition of "clean" in this case is a function of environmental hazard or risk, and not solely on the continued presence of constituents at levels below the characteristic level. In addition, treatment and subsequent disposal of a simple characteristic waste in a controlled fashion is a different matter. Clean closures are usually conducted in order to allow the land area to be used for other purposes. In the case of treatment of characteristic wastes, the treated residue waste will likely be disposed in a landfill that will have limitations on further use, unless it too is clean closed. DOE believes that EPA's argument that treatment can be required to below characteristic levels, because clean closures involve removal of contaminated soils containing constituents below characteristic levels, is inappropriate.

EPA's proposed rule would result in fundamentally inconsistent treatment of similar waste, despite the assertion that it's proposal is intended to assure consistency with the clean closure rule, delisting requirements, etc. A rule which requires treatment of a corrosive waste to a pH of 6 to 9 if the waste formerly had a pH of 12.5 or higher, but which does not require treatment of a waste with a pH of 12 does not appear to be consistent. DOE maintains that it is incongruous to require treatment of characteristic wastes beyond levels at which such wastes are defined as hazardous.

Comment Number: 1-Q-10 (continued)

Docket Number: LD12-00198

Commenter: Department of Energy

Issue: General BDAT Aspects

Subissue: Treatment Standards for Characteristic Wastes

Comment:

To date, EPA has not concerned itself with solid "nonhazardous" wastes that contain constituents such as metals, at levels lower than EP characteristic levels. Such wastes are not considered hazardous and are not currently regulated by EPA under RCRA Subtitle C. DOE agrees with this established approach and finds it inappropriate that EPA is now considering regulation of wastes below characteristic levels. If there is true concern regarding the hazardous nature of solid wastes that contain hazardous components below the characteristic level, DOE believes that EPA should consider changing the characteristic to be truly reflective of the levels it believes to pose a hazard to human health and the environment. Requiring treatment below levels used to define wastes as hazardous "to protect human health and the environment" indicates that EPA has established the definition of the characteristic hazardous wastes at levels above those necessary to protect human health and the environment. DOE considers EPA's proposed approach of establishing treatment standards for characteristic wastes below characteristic levels inappropriate and unwarranted.

DOE believes that treatment of restricted characteristic wastes to the characteristic (i.e., nonhazardous) level will be protective of human health and the environment, and further, will be the best option considering the wide diversity in waste types that meet the characteristic definition. This also applies to RMW. RMW that exhibit characteristics represent very diverse waste types, matrices, and forms. The proposed characteristic waste treatment standards that are below characteristic levels,

Comment Number: 1-Q-10 (continued)
Docket Number: LD12-00198
Commenter: Department of Energy
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Comment:

based on technologies applicable to non-radioactive hazardous wastes, may be unattainable for many RMW streams.

This is of concern to DOE in that it is necessary to also consider the radioactive component in application of treatment technologies for RMW, while at the same time limiting potential radiation exposure during treatment and disposal. Treatment of RMW requires special handling techniques. As a general rule, treatment of a radioactive waste has the potential to result in worker exposure. Under the Atomic Energy Act (AEA), and under EPA guidance on radiation protection, DOE cannot incur radiation doses to treat wastes unless the benefits of that treatment outweigh the radiation doses incurred. DOE is concerned that treatment of characteristic RMW below characteristic levels will provide only minimal and speculative benefits, while imposing potentially unavoidable radiation dose costs.

As indicated above, treatment of RMW beyond characteristic levels without considering the radioactive component, may pose greater risks. For example, some high level RMW currently being stored in tanks was intended to be treated through separation processes followed by grouting of low level fractions and vitrification of high level fractions. The pH of these wastes has been adjusted to in excess of 12.5 to prevent corrosion of the tanks. The optimum pH for these wastes is consistent with DOE's plans for treatment to address radiation risks. DOE should not be constrained by treatment to a pH ranging from 6 to 9, even though the risk posed by the hazardous nature of the waste may be reduced, the risk posed by the radioactive component may be increased.

Comment Number: 1-Q-10
Docket Number: LD12-00198
Commenter: Department of Energy
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Response:

In the November 22, 1989, notice, the Agency proposed treatment standards based on the performance of best demonstrated available technology without regard to the characteristic level. The Agency is today promulgating treatment standards for the characteristic wastes based on the performance of technology as proposed; however, the individual treatment standards have been revised to reflect data submitted during the comment period, which showed wide variability in the wastestreams and an inability to consistently achieve the proposed treatment standards. Therefore, the treatment standards for these characteristic wastes generally take one of two forms: (1) a concentration level equal to or greater than the characteristic level ; or (2) a specified treatment technology.

Regarding the example presented by the commenter, the Agency wants to point out that this example is not relevant to the final rule.

Comment Number: 1-Q-11
Docket Number: LD12-00185
Commenter: Shell Oil Company
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Comment:

"Characteristic" Waste Standards

The issues raised concerning management of the "characteristics" hazardous wastes are formidable, and workable solutions are not readily apparent. We urge the Agency to extend the time beyond the May 8, 1990 date for LDR application for this waste grouping to allow further data development and evaluation before standards are promulgated. We foresee, for example, significant problems in dealing with reactive sulfides, producing insoluble salts from neutralization of corrosive wastes and from the proposal to deactivate reactive wastes. We anticipate developing data in these areas and will submit these data for Agency evaluation in the broad context of the policy that the standards are to be technology based. We prefer the LDR to be focused on those properties which are the measured charateristic. Time for additional evaluation is supportable from the Agency interpretation that the "hard hammer" previsions in the statute are not applicable to "characteristics" wastes.

Comment Number: 1-Q-11
Docket Number: LD12-00185
Commenter: Shell Oil Co.
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Response:

In the November 22, 1989, notice, the Agency proposed treatment standards based on the performance of best demonstrated available technology without regard to the characteristic level. The Agency is today promulgating treatment standards for the characteristic wastes based on the performance of technology as proposed; however, the individual treatment standards have been revised to reflect data submitted during the comment period, which showed wide variability in the wastestreams and an inability to consistently achieve the proposed treatment standards. EPA also is not transferring standards to characteristics from other waste codes. Therefore, the treatment standards for the characteristic wastes take one of two forms: (1) a concentration level equal to or greater than the characteristic level ; or (2) a specified treatment technology.

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Comment Number: 1-Q-12
Docket Number: LD12-00158
Commenter: Department of Energy
Issue: General BDAT Aspects
Subissue: Treatment Standa ds for Characteristic Wastes
Comment:

7) __54 FR 48428, Proposed Treatment Star ards for Metal Wastes__.

As stated in the preamble to the proposec rule, EPA is proposing
treatment standards for characteristic EF toxic metal wastes
expressed as concentration-based standarc or as required methods
of treatment. For many of the D,F,K,U, a d P wastes, EPA is
proposing treatment standards expressed a concentrations of
specific metals. Performance data are av ilable from treatment
of various F and K wastes which contain t ese metals.
Characterization data on many of these me al wastes are limited,
and therefore, EPA is proposing treatment standards for many
metal-bearing wastes based on a transfer f performance data from
other wastes containing these metals havi g similar waste
characteristics.

For most metal-containing wastes, EPA is onsidering establishing
treatment standards based on a number of echnologies, including
recycling/recovery (thermal recovery), ch ical precipitation,
alkaline chlorination, roasting or retort ng, incineration, and
conventional and specialized stabilizatic technologies.
Conventional stabilization technologies i clude cementitious
processes, whereas specialized technologi s include the addition
of binders and use of molten glass (vitri cation). DOE feels
that many of these technologies will be a plicable to most metal-
containing wastes, including characterist c wastes. Because DOE
relies to a significant extent on mobilit reducing technologies
for RMW, establishment of treatment stand rds based on other
technologies could be severely prohibitiv . Mobility reducing
technologies are within the HSWA mandate, nd are protective of
human health and the environment. The us of these technologies
should not be prohibited over other techn logies when more than
one technology can be shown to meet the d finition of Best
Demonstrated Available Technology (BDAT). For this reason, DOE
recommends that treatment standards estab shed for metal-
containing wastes allow the use of all ap icable technologies
that can achieve the characteristic level

Comment Number: 1-Q-12 continued
Docket Number: LD12-00198
Commenter: Department of Energy
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Comment:

In addition, because DOE has been applying stabilization and related technologies to it's wastes for some time, a considerable amount of information is available that can be used to aid in establishing treatment standards. Successful cementitious and other formulations have ben developed for various RMW. DOE has recently (December 22, 1989) and today resubmitted information on methods of stabilization of metal-containing RMW.

EPA has recognized that RMW present unique problems in treatment and disposal. In the proposed rule a separate Radioactive Lead Solids Subcategory has been established. In addition, two mercury wastes have been placed into a separate radioactive group. Information indicates that the BDAT technologies and standards for the corresponding nonradioactive wastes may not be applicable for the radioactive wastes, since many technologies and standards proposed for the nonradioactive wastes in the metals group are based on a transfer of performance data from other wastes containing these metals. For these reasons, DOE recommends that EPA consider placing all EP toxic metal wastes that exhibit radioactivity into separate radioactive subcategories as they have done for lead and mercury. DOE believes that separate treatability subcategories and alternative treatment standards are appropriate for these RMW.

Comment Number: 1-Q-12
Docket Number: LD12-00198
Commenter: Dpmt of Energy
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Response:

Today's treatment standards apply to mixtures of different waste streams. Where a waste mixture consists of listed wastes and has more than one applicable concentration-based treatment standard for a particular constituent, the most stringent standard must be met prior to land disposal (see 40 CFR 268.41(b).) In the event that such a waste mixture cannot be treated to meet the most stringent standard, one may petition the Agency for a variance from the treatment standard pursuant to 40 CFR 268.44.

Comment Number: 1- Q-13
Docket Number: LD12-00243
Commenter: Nat. Council of the paper Industry for Air and Stream Improvement, Inc.
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Comment:

(1) Neither the data in the preamble to the proposed regulation nor the data in the background documents support the treatment standards proposed by the agency for characteristic wastes, primarily because the data fail to reflect the enormous diversity in the physical and chemical characteristics of such wastes.

It is obvious that EPA is developing treatment standards for 'characteristic wastes' using very limited data. This is very troublesome considering the enormous variety of wastes that will be covered by these standards. There can be very little assurance that the standards will be achievable on all or even most characteristic wastes when the data used to derive the standards result from tests on very few wastes.

While the Agency faces similar problems in developing treatment standards for listed wastes, the difficulties associated with developing treatment standards for 'characteristic wastes' are greater by orders of magnitude because of the almost limitless diversity in 'characteristic wastes'.

We understand that the Agency has interpreted the 'hard hammer' provisions of the RCRA amendments as applying to 'characteristic wastes' and that, given this interpretation, it is important to promulgate treatment standards for these wastes. (We will leave the question of the appropriateness of this interpretation to those with legal expertise.) Unfortunately, this places the Agency in the position of developing standards without having time to develop the data needed to support them. The Agency, however, has made a bad situation worse by insisting on using the limited available data to develop treatment standards that are more restrictive than required to satisfy the corresponding characteristic.

Comment Number: 1-Q-13
Docket Number: LD12-00243
Commenter: Nat. Council of the Paper Industry for Air and Stream Improvement
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Response:

In the November 22, 1989, notice, the Agency proposed treatment standards based on the performance of best demonstrated available technology without regard to the characteristic level. The Agency is today promulgating treatment standards for the characteristic wastes based on the performance of technology as proposed; however, the individual treatment standards have been revised to reflect data submitted during the comment period, which showed wide variability in the wastestreams and an inability to consistently achieve the proposed treatment standards. EPA also is not transferring standards to characteristics from other waste codes. Therefore, the treatment standards for the characteristic wastes take one of two forms: (1) a concentration level equal to or greater than the characteristic level ; or (2) a specified treatment technology.

Comment Number: 1-Q-14
Docket Number: LD12-L0005
Commenter: Kodak
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Comment:

Kodak urges the Agency to consider the third option, the No Land Disposal option for characteristic wastes and simply establish the characteristic level as the treatment standard. Many complications arise when separate treatment standards or technologies are specified. Some treatment standards applicable to listed wastes that could also be classified as characteristic wastes contradict treatment technologies specified for the characteristic wastes. The "derived from" and "mixture" rules are not legally applicable to characteristic waste residues. Characteristic wastes treated to levels below the entry level into the hazardous waste management program should not be subject to Subtitle C management requirements or the land disposal restrictions program.

Comment Number: 1-Q-14
Docket Number: LD12-L0005
Commenter: Kodak
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Response:

In the November 22, 1989, notice, the Agency proposed treatment standards based on the performance of best demonstrated available technology without regard to the characteristic level. The Agency is today promulgating treatment standards for the characteristic wastes based on the performance of technology as proposed; however, the individual treatment standards have been revised to reflect data submitted during the comment period, which showed wide variability in the wastestreams and an inability to consistently achieve the proposed treatment standards. EPA also is not transferring standards to characteristics from other waste codes. Therefore, the treatment standards for the characteristic wastes take one of two forms: (1) a concentration level equal to or greater than the characteristic level ; or (2) a specified treatment technology.

Comment Number: 1-Q-15
Docket Number: LD12-00113
Commenter: Michigal Disposal, Inc.
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Comment:

D004 - D011 CHARACTERISTIC WASTES

The proposed rule established a standard for treatment which is one order of magnitude less than the EP toxic limits. The new standards are equally applicable to comparable U or P coded wastes. However, such materials are not chemically analogous to characteristic wastes which originate from various sources. Most actual wastes consist of complex mixtures that have many ionic, organic and inorganic species which influence their precipitation. It is easy to treat a pure mercury salt, finishing treatment with sulfide precipitation, and meet the BDAT treatment level proposed. If, however, organics or other metallic species such as hexavalent chromium are present, the BDAT standards will not easily be achieved.

Comment Number: 1-Q-15
Docket Number: LD12-00113
Commenter: Michigan Disposal, Inc
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Response:

In the November 22, 1989, notice, the Agency proposed treatment standards based on the performance of best demonstrated available technology without regard to the characteristic level. The Agency is today promulgating treatment standards for the characteristic wastes based on the performance of technology as proposed; however, the individual treatment standards have been revised to reflect data submitted during the comment period, which showed wide variability in the wastestreams and an inability to consistently achieve the proposed treatment standards. Therefore, the treatment standards for these characteristic wastes generally take one of two forms: (1) a concentration level equal to or greater than the characteristic level ; or (2) a specified treatment technology.

Data support that levels below the characteristic levels are achievable therefore the Agency is confident that the promulgated numeric treatment standards (levels greater than or equal to the characteristic level for the specified characteristic wastes) are routinely achievable.

Comment Number: 1-Q-16
Docket Number: LD12-00202
Commenter: GNB, Inc.
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Comment:

EPA has proposed treatment standards for certain characteristic hazardous wastes that would require treatment below the characteristic levels. 54 Fed. Reg. 48,490. This approach is wrong as a matter of both law and policy.

EPA's authority under subtitle C of RCRA "clearly" applies only to the regulation of hazardous wastes. American Mining Congress v. United States Environmental Protection Agency, 824 F.2d 1177, 1179 (D.C. Cir. 1987); accord, American Iron and Steel Institute v. United States Environmental Protection Agency, 886 F.2d 390, 395 (D.C. Cir. 1989). Therefore, once a waste has been treated so that it is no longer hazardous, EPA's subtitle C regulatory authority ends.

Not only is EPA's position on this issue legally unsound, but is utterly impractical as well. If EPA adopts the proposed treatment standards for characteristic hazardous wastes, then wastes that are physically and chemically indistinguishable from one another would be subject to completely different regulatory controls if one waste was the non-hazardous residue of a hazardous waste and the other was a waste below the characteristic level from the outset. The first waste would be subject to the land ban unless it were first treated to the limits of modern technology (as provided in the BDAT), while the other could be placed on the land without any restrictions at all. Further, disposal facilities would be unable to tell the difference between the origins of the identical wastes, making it virtually impossible for them to carry out their legal obligations.

Comment Number: 1-Q-16
Docket Number: LD12-00202
Commenter: GNB, Inc
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Response:

In the November 22, 1989, notice, the Agency proposed treatment standards based on the performance of best demonstrated available technology without regard to the characteristic level. The Agency is today promulgating treatment standards for the characteristic wastes based on the performance of technology as proposed; however, the individual treatment standards have been revised to reflect data submitted during the comment period, which showed wide variability in the wastestreams and an inability to consistently achieve the proposed treatment standards. Therefore, the treatment standards for the characteristic wastes take one of two forms: (1) a concentration level equal to or greater than the characteristic level ; or (2) a specified treatment technology.

Characteristic wastes may contain a myriad of "D" waste metals and organics, such that for EPA to guarantee regulation of all possible combinations would require a list of 39 components (the length of the "D" toxic list), plus ignitability (D001), corrosivity (D002), and reactivity ((D003) for each "D" waste. This is however unnecessary since the residuals from treating any one (or more) characteristic can be judged on their own merit.

EPA also notes that the EP regulatory levels proposed for the "D" wastes have been changed to TCLP values in the final rule (except for arsenic (D004) nonwastewaters.)

Comment Number: 1-Q-17
Docket Number: LD12-00250
Commenter: Private Citizen
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Comment:

EPA's proposed treatment standards are inconsistent and arbitrary.

According to the regulations in 40 CFR 261 Subpart C, four characteristics can cause a waste to be classified as hazardous. If a solid waste that is characteristically hazardous is treated, the solid waste generated in the treatment will be hazardous, if it exhibits the hazardous characteristic [40 CFR 261.3(c)(2)(i)]. Similarly, if the solid waste generated by the treatment of a characteristically hazardous waste no longer exhibits the characteristic, it will not classified as a hazardous waste [40 CFR 261.3(d)(1)].

First, the treatment required for of similar types of waste is inconsistent. For example, a solid waste that leaches less than 5 mg/L lead in the EP toxicity test may be land disposed as a nonhazardous waste without any treatment even if the waste leaches more than 0.51 mg/L lead in the TCLP test. A similar solid waste that leaches more than 5 mg/L lead in the EP Toxicity test and is treated such that it leaches less than 5 mg/L lead is no longer a hazardous waste [40 CFR 261.3(d)(1)]. It is inconsistent and arbitrary that one nonhazardous waste must be further treated prior to land disposal while a similar nonhazardous waste requires none.

Second, EPA does not consider the wide variety of wastes that exhibit the characteristic of EP Toxicity and there is no consideration of interactions. Wastes often contain both lead and cadmium. The treatment standard for lead is based on a wastewater treatment sludge, F006, and the treatment standard for cadmium is based on electric arc furnace dust, K061.

Comment Number: 1-Q-17
Docket Number: LD12-00250
Commenter: James E, Clemmer
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Response:

In the November 22, 1989, notice, the Agency proposed treatment standards based on the performance of best demonstrated available technology without regard to the characteristic level. The Agency is today promulgating treatment standards for the characteristic wastes based on the performance of technology as proposed; however, the individual treatment standards have been revised to reflect data submitted during the comment period, which showed wide variability in the wastestreams and an inability to consistently achieve the proposed treatment standards. Therefore, the treatment standards for the characteristic wastes take one of two forms: (1) a concentration level equal to or greater than the characteristic level ; or (2) a specified treatment technology.

Comment Number: 1-Q-18
Docket Number: LD12-00129
Commenter: Olin Chemicals
Issue: General BDAT Aspects
Subissue: Treatment standards for Characteristic Wastes
Comment:

Proposed Treatment Standards for Metal Wastes (III.A.5)

As a general statement, Olin disagrees with USEPA in setting BDAT treatment standards for characteristic metal wastes below the characteristic level. The Agency does not present its logic or rationale in setting lower levels. As a point of information, the original levels were set to protect human health and the environment. The levels were set so that, if wastes with lower than the characteristic levels were placed in sanitary landfills, the wastes and any resultant leachate would not present a threat to the environment. Olin believes that still to be the case, and has not seen any published evidence to the contrary. Therefore, we request that the BDAT level for the metal wastes D004-D011 be set at their respective characteristic levels . Furthermore, once a waste is treated to or below the characteristic level, pursuant to 40 CFR 261, neither the waste nor residue should no longer be considered a hazardous waste.

In further defense of setting treatment standards at the characteristic level, Olin offers the following example: Lead bearing wastes, for example, with a leachable lead concentration of 6 mg/l would, under the proposal, need to be treated to a BDAT concentration of 0.51 mg/l leachable lead prior to land disposal, while wastes with 4 mg/l leachable lead could be disposed of in a Subtitle D unit.

Comment Number: 1-Q-18 (continued)
Docket Number: L012-00129
Commenter: Olin Chemicals
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Comment:

Currently, a common industry practice is to assume that its metal bearing wastes are hazardous without laboratory verification and to dispose of them in RCRA permitted facilities. Under the Agencies proposal, industry would be forced to test these wastes for their characteristic level to avoid unnecessary treatment, and if found not hazardous will have the option of placing them in Subtitle D units. This will result in substantial quantities of low level metal wastes, that are currently being disposed of in RCRA permitted facilities, being placed in Subtitle D (sanitary) units. Is this the real intention of the Agency?

In summary, Olin recommends that USEPA set the BDAT for metal wastes at the characteristic level.

Comment Number: 1-Q-18
Docket Number: LD12-00129
Commenter: Olin
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Response:

In the November 22, 1989, notice, the Agency proposed treatment standards based on the performance of best demonstrated available technology without regard to the characteristic level. The Agency is today promulgating treatment standards for the characteristic wastes based on the performance of technology as proposed; however, the individual treatment standards have been revised to reflect data submitted during the comment period, which showed wide variability in the wastestreams and an inability to consistently achieve the proposed treatment standards. Therefore, the treatment standards for the characteristic wastes take one of two forms: (1) a concentration level equal to or greater than the characteristic level ; or (2) a specified treatment technology. Metal wastes, the concern of this commenter, have treatment standards set at the characteristic level or above; therefore the commenter's concern is nullified by this approach.

The Agency points out in reference to the commenter's assertion that characteristic levels were set to protect human health and the environment, while this is true to a certain extent the Agency has held that these levels are merely the starting point. The Agency has stated in the past and in the context of this rulemaking that levels below the characteristic level may be more protective by reducing the hazard.

Comment Number: 1-Q-19
Docket Number: LD12-00201
Commenter: the American Mining Congress
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Comment:

B. EPA Cannot and Should Not Require Characteristic Hazardous Wastes To Be Treated Below Levels At Which They Are No Longer Hazardous

EPA has proposed treatment standards for certain characteristic hazardous wastes that would require treatment below the characteristic levels. 54 Fed. Reg. at 48,490. As discussed below, however, this approach is prohibited by the clear language of the statute. Moreover, even if this approach were allowed under the statute, EPA should reject it. The Agency should instead set treatment standards for characteristic hazardous wastes that are equivalent to the characteristic levels or to technology based levels if those levels are higher.

Comment Number: 1-Q-19
Docket Number: LD12-00201
Commenter: American Mining Congress
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Response:

In the November 22, 1989, notice, the Agency proposed treatment standards based on the performance of best demonstrated available technology without regard to the characteristic level. The Agency is today promulgating treatment standards for the characteristic wastes based on the performance of technology as proposed; however, the individual treatment standards have been revised to reflect data submitted during the comment period, which showed wide variability in the wastestreams and an inability to consistently achieve the proposed treatment standards. Therefore, the treatment standards for these characteristic wastes generally take one of two forms: (1) a concentration level equal to or greater than the characteristic level ; or (2) a specified treatment technology.

Data support that levels below the characteristic levels are achievable therefore the Agency is confident that the promulgated numeric treatment standards (levels greater than or equal to the characteristic level for the specified characteristic wastes) are routinely achievable.

Comment Number: 1-Q-20
Docket Number: LD12-00179
Commenter: Dow CHEMICAL
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Comment:

XXIII. EPA SHOULD CLARIFY THAT CHARACTERISTIC HAZARDOUS WASTES MUST BE TREATED TO MEET ONLY THOSE TREATMENT STANDARDS FOR THE CHARACTERISTICS THAT THEY EXHIBIT.

54 Fed. Reg. 48,419, column 1

If the owner/operator has an ignitable waste which is treated by the technology of incineration, EPA has previously stated that all treatment residues will be presumed to meet the land disposal restrictions treatment standards. Now, however, EPA is proposing additional testing and possibly further treatment if the incinerator ash exceeds the characteristic level for an EP toxic metal. All the ramifications of such a position are not clear. If the ash exceeds the characteristic level for E.P. toxicity due to arsenic, Dow believes that there should be no requirement that the ash be vitrified. If the characteristic level for other E.P. toxic metals is exceeded, Dow believes it is inappropriate to require that the ash be chemically precipitated and/or stabilized. EPA should not require such extreme and unnecessary measures when the treatment technology specified has been employed. The incinerator ash should not be considered to be a newly generated waste which would have to be newly characterized, rather it is a residue from the treatment of a waste and as such should only have to meet the treatment standards applicable to the waste treated.

EPA should therefore clarify in the final rule that characteristic wastes must meet only those treatment standards for the characteristics they exhibit.

Comment Number: 1-Q-20
Docket Number: LD12-00179
Commenter: Dow Chemical
Issue: General BDAT Aspects
Subissue: Treatment Standards for Characteristic Wastes
Response:

EPA views the statute as precluding land disposal of characteristic wastes unless treated to meet the Section 3004 (ml standard). EPA has structured the rule so that if the treatment standard addresses the characteristic constituent, then no further treatment is required. This meets the commenter's concern regarding having treated but needing to treat more. If the characteristic constituent is not addressed by the treatment standard for the listed waste, however, and the waste exhibits a characteristic, then further treatment is both environmentally and legally appropriate.

Comment Number: 1-R-1

Docket Number: LD12-00157

Commenter: Assoc. of State and Territorial Solid Waste Management Officials

Issue: General BDAT Aspects

Subissue: No Land Disposal

Comment:

No Land Disposal

As we indicated in our comments on the proposed rule for LDR for the second third of scheduled wastes, we support USEPA's proposal to eliminate use of this treatment standard for non-wastewater wastes.

Comment Number: 1-R-1
Docket Number: LD12-00157
Commenter: Assoc. of State and Territ. Solid Waste Mgmt. Officials
Issue: General BDAT Aspects
Subissue: No Land Disposal
Response:

EPA acknowledges commenter's support.

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Comment Number: 1-R-2
Docket Number: LD12-00179
Commenter: Dow CHEMICAL
Issue: General BDAT Aspects
Subissue: No Land Disposal
Comment:

IX. EPA SHOULD AVOID ESTABLISHING "NO LAND DISPOSAL" AS A TREATMENT STANDARD FOR ANY HAZARDOUS WASTES

54 Fed. Reg. 48,389, 48,419, 48,490

EPA has proposed to "revoke all 'No Land Disposal' standards that were previously promulgated," apparently, at least in part, because "commenters to previous land disposal restriction rules have raised concerns over the effect of these standards." 54 Fed. Reg. 48,419. Nevertheless, the agency claims that," for some U and P wastes that have a low probability of generation, the 'No Land Disposal Based on No Generation' alternative may be feasible." 54 Fed. Reg. 48,389. Dow supports EPA's decision to move away from the "No Land Disposal" ("NLD") standard. However, Dow believes that it is improper and unwise for EPA to continue to consider this standard as a potential option for certain hazardous wastes. The "NLD" standard is not authorized by the statute and can lead to serious difficulties for facilities that manage residues from historically generated wastes.

Section 3004(m) of RCRA directs EPA to:

> promulgate regulations specifying those levels or methods of treatment, if any, which substantially diminish the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that the short-term and long-term threats to human health and the environment are minimized.

Comment Number: 1- R.2 continued
Docket Number: LD12-00179
Commenter: DOW CHEMICAL
Issue: General BDAT Aspects
Subissue: No Land Disposal
Comment:

42 U.S.C. Section 6924(m)(1) (emphasis added). This clear statutory directive does not authorize EPA to specify "No Land Disposal" as a treatment standard, for "NLD" is not "a level or method" of treatment. This same statutory section makes clear that once a hazardous waste has been treated "to the level or by the method specified in the regulations," the waste "shall not be subject to any prohibition . . . and may be disposed of in a land disposal facility . . ." 42 U.S.C Section 6924(m)(2). A standard of "NLD" thus contradicts the statutory requirement that standards be stated as a "level or method" and the express statutory intent that wastes treated in accordance with section 3004(m) standard be eligible for disposal in land disposal facilities.

In any event, EPA should decline, on policy grounds, to establish "NLD." EPA states that "NLD" may be appropriate because certain P and U wastes "have a very low probability of generation." 54 Fed. Reg. 48,389. These wastes, however, may be generated in pure form on an occasional basis and, under the Agency's proposal, management of these wastes would be extremely difficult. Moreover, P and U wastes are also generated on a continuing basis in the form of residues derived from the historic management of these wastes. For example, a landfill containing historically-generated P or U wastes may generate leachate that, under EPA's waste code carry-through principle, would also be considered a P or U waste. If "NLD" is established as the treatment standard for such wastes, management of the leachate would become virtually impossible.

EPA has previously recognized these difficulties with the "NLD" treatment standards and has therefore severely restricted their applicability. See 54 Fed. Reg. 18,836 (May 2, 1989). In addition, as noted above, EPA has proposed to revoke all remaining "NLD" standards that remain. 54 Fed. Reg. 48,419. Dow supports this move. However, the Agency should not repeat the mistakes of the past by promulgating a new set of "NLD" standards for certain P and U wastes.

Comment Number: 1-R-2
Docket Number: LD12-00179
Commenter: Dow Chemical
Issue: General BDAT Aspects
Subissue: No Land Disposal
Response:

EPA is not promulgating "No Land Disposal" as treatment standard for any of the listed waste codes.

Comment Number: 1-S-1
Docket Number: L012-00159
Commenter: Waste Mgmt., Inc. + Chemical Waste Mgmt., Inc.
Issue: General BOAT Aspects
Subissue: Wastes with Multiple Characteristics
Comment:

Wastes Exhibiting Multiple Characteristics

EPA's proposed treatment standards do not take into account the existence of wastes that exhibit more than one hazardous characteristic. EPA has developed its treatment standards by looking at only one metal at a time. However, many wastes contain a variety of metals and, since the metals have different chemistries, it may well not be possible to meet all of the treatment standards at the same time. For example, *H36567 is an asphalt based roofing material contaminated with cadmium sulfide, mercury sulfide, cadmium selenide and barium sulfate. According to the proposed rule, this material may need to be retorted to treat the mercury, acid leached to treat the barium, vitrified to treat the selenium and stabilized to treat the cadmium. Another example is waste *H74337, lead acid batteries which contain lead, cadmium, and mercury. According to the proposed rule this material must be both smelted to recover lead and retorted to recover mercury. This material may also contain arsenic, which would require application of other treatment technologies. The Agency must clarify how such wastes are to be handled and should reconsider the applicability of treatment standards derived from single characteristic wastes to multiple characteristic wastes.

Comment Number: 1-5-1continued
Docket Number: LD12-00159
Commenter: Waste Mgmt. Inc. and Chemical Waste Mgmt. Inc.
Issue: General BDAT Aspects
Subissue: Wastes with multiple characteristics
Comment:

Another example of problems caused by imposing required technologies on wastes with more than one hazardous characteristic is the high level subcategory of D008 (lead containing wastes). BDAT for these wastes is high temperature metals recovery. However, many of these wastes contain other metals that are not suitable for this process and will produce residues that are still characteristic wastes and are difficult to treat. Some examples of such high lead waste streams are:

*J58122	Lead encased X-ray tubes with chromium tungsten targets and beryllium windows
*M59022	Glass frit sludge with 5.2% lead oxide (Note: TCLP lead is reduced to 0.26 mg/l after stabilization with cement)
*X11581	Test house cap stubs with 60-80% lead
*M55012	Glass grinding sludge with 5-15% lead and 20-30% barium. (In such a case the Agency must clarify whether the treatment should be to thermally recover the lead or to acid leach the barium, which would also solubilize the lead).

Comment Number: 1-S-1
Docket Number: LD12-00159
Commenter: Waste Mgmt., Inc., Chem. Waste Mgmt., Inc.
Issue: General BDAT Aspects
Subissue: Waste with Multiple Characteristics
Response:

This comment raises a significant concern which is shared by the Agency. Since most of the little data EPA has is for treatment of one single metal, the Agency is understandably hesitant about developing optimized treatment standards for single metals without knowing what other metals require treatment.

Comment Number: 1-5-2
Docket Number: LD12-00129
Commenter: Olin Chemicals
Issue: General BDAT Aspects
Subissue: Wastes with Multiple Characteristics
Comment:

Standards for Listed Waste that Also Exhibit a Characteristic (III.C.3.)

In response to USEPA's request for "...comment on whether it should promulgate explicit regulatory language in 268.7..." on treatment standards, Olin offers the following We believe that the current language is clear in that it is the generators responsibility to determine if it has a hazardous waste, whether the waste is listed or characteristic, whether the waste is subject to the land disposal restrictions and if so, to determine the appropriate treatment standard. The regulatory language in 40 CFR 260, 261 and 268 regarding treatment standard requirements is adequate and any attempt by USEPA without the appropriate comment period by the regulated community (and other interested parties) may lead to more confusion than it is attempting to remedy.

Comment Number: 1-S-2
Docket Number: LD12-00129
Commenter: Olin
Issue: General BDAT Aspects
Subissue: Waste with Multiple Characteristics
Response:

EPA believes that if a waste is identified as carrying more than one characteristic, it would need to meet each treatment standard or utilize each method. Today's treatment standard apply to mixture of different waste streams. Where a waste mixture consist of listed wastes and has more than one applicable concentration-based treatment standard for a particular constituent, the most stringent standard must be met prior to land disposal (see 40 CFR 268.41(b)). In the event that such a waste mixture cannot be treated to meet the most stringent standard, one may petition the Agency, for a variance from the treatment standard pursuant to 40 CFR 268.44.

Comment Number: 1-S-3
Docket Number: LD12-00081
Commenter: Envirosafe Management Service, Inc
Issue: General BDAT Aspects
Subissue: Wastes with Multiple Characteristics
Comment:

EPA re-emphasizes that if a characteristic waste or a treatment residue is mixed with a listed hazardous waste, the entire mixture is considered to be a listed hazardous waste, even if treated to remove all the characteristics. In the situation where you take a D007 and it is mixed with a small quantity of F006, what would be the appropriate level of chromium that you would have to meet? This situation could lead to the purposeful mixing of small quantities of a listed waste with the characteristic waste so that a higher level of treatment would then be permissible. This needs to be clarified and further indicates that different levels for the same constituent causes confusion.

Comment Number: 1-S-3
Docket Number: LD12-00081
Commenter: Envirosafe Mgmt. Services
Issue: General BDAT Aspects
Subissue: Waste with Multiple Characteristics
Response:

EPA believes that if a waste is identified as carrying more than one characteristic, it would need to meet each treatment standard or utilize each method. Today's treatment standard apply to mixture of different waste streams. Where a waste mixture consist of listed wastes and has more than one applicable concentration-based treatment standard for a particular constituent, the most stringent standard must be met prior to land disposal (see 40 CFR 268.41(b)). In the event that such a waste mixture cannot be treated to meet the most stringent standard, one may petition the Agency, for a variance from the treatment standard pursuant to 40 CFR 268.44.

Comment Number: 1-5-4
Docket Number: LD12-00190
Commenter: Union Carbide Chemicals and Plastics Company
Issue: General BDAT Aspects
Subissue: Wastes with Multiple Characteristics
Comment:

Treatment of Multiple Characteristic Waste Streams - UCC has a waste stream that exhibits multiple characteristics (ignitability and reactivity). UCC treats the stream with water to deactivate the waste. In so doing, the waste also loses its ignitable characteristic. It is UCC's position that this would constitute permissible dilution and that the stream can be discharged to the process sewer for further biological treatment. The stream would no need to be incinerated or burned in a boiler despite the fact that initial waste stream exhibited the characteristic of ignitability.

Comment Number: 1-S-4
Docket Number: LD12-00190
Commenter: Union Carbide Chemicals and Plastics Co., Inc
Issue: General BDAT Aspects
Subissue: Waste with Multiple Characteristics
Response:

The standard for ignitables (D001) with less than 10 percent TOC as generated is deactivation. If the treatment described by the commenter eliminates the characteristic of ignitables, it is allowed treatment. The Agency's position is to discourage dilution of hazardous wastes even if such dilution is permissible to treat a characteristic waste. However, in the circumstance presented by the commenter, since dilution is permissible treatment for D001 ignitable wastes (with less than ten percent TOC) and if the treated waste stream no longer has the characteristic of ignitability or reactivity or any other characteristic (e.g., toxic metal EP), the Agency agrees that the waste stream may be discharged for further biological treatment.

Comment Number: 1-T-1
Docket Number: LD12-00167
Commenter: Westinghouse Electric Corporation
Issue: General BDAT Aspects
Subissue: Incineration/Fuel Substitution
Comment:

INCINERATION AS A SPECIFIED TECHNOLOGY

Specifying technologies such as incineration as a sole treatment method severely limits the options currently available to industry and inhibits the future research and development of new technologies. For example, other thermal treatment technologies that destroy or render wastes nonhazardous but that may not be considered incineration have been and/or are being developed. For example, thermolytic detoxification and thermal pyrolysis are both equivalent to incineration in their ability to destroy organics at destruction removal levels of 99.99% or greater. Further, other technologies may be developed that provide equivalent treatment. Mandating incineration as the sole specified technology will stifle the development of alternative technologies that may be superior. It is recommended that EPA revise the treatment standards of "incineration" to "incineration or other equivalent treatment."

Comment Number: 1-T-1

Docket Number: LD12-00167

Commenter: Westinghouse Electric Corp.

Issue: General BDAT Aspects

Subissue: Incineration/Fuel Substitution

Response:

Compliance with a concentration-based treatment standard requires only that the treatment level be achieved; once achieved, the waste may be land disposed. The waste need not be treated by the BDAT technology; in fact, a concentration-based treatment standard provides maximum flexibility in one's choice of treatment technology because any treatment, unless prohibited or unless defined as land disposal can be used to achieve these standards.

Some treatment standards in today's rule, however, are expressed as a treatment method rather than a concentration-based standard. EPA typically established treatment method as the standard when it has no means of calculating valid concentration-based standards. In such cases the specified technology must be used to treat that particular waste (including any mixture that contains the waste). After the waste is treated using the specified method it may be land disposed, unless EPA has specified otherwise in the rule, or if the residues exhibits a hazardous waste characteristic and does not meet the treatment standard for that characteristic. In situations where wastes subject to concentration-based standards are mixed with wastes subject to treatment standards expressed as a method, the mixture must be treated by the specified method and must also meet the concentration-based treatment standards for any other prohibited waste contained in the matrix.

When EPA requires the use of a technology (or technologies) a generator or treater may demonstrate that an alternative treatment method can achieve the equivalent level of performance as that of the specified treatment method. This demonstration is typically both waste-specific and site-specific and may be based on: 1) the development of a concentration-based standard that utilizes a surrogate nor indicator compound that guarantees effective treatment of the hazardous constituents; 2) the development of a new analytical method for quantifying the hazardous constituents; and 3) other demonstrations of equivalence for an alternative method of treatment based on a statistical comparison of technologies, including a comparison of specific design and operating parameters.

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Comment Number: 1-T-2
Docket Number: LD12-00179
Commenter: Dow CHEMICAL
Issue: General BDAT Aspects
Subissue: Incineration/Fuel Substitution
Comment:

XII. EPA SHOULD ALLOW FUEL SUBSTITUTION IN INDUSTRIAL BOILERS AND FURNACES AS AN ALTERNATIVE TREATMENT TECHNOLOGY WHENEVER INCINERATION IS REQUIRED OR ALLOWED AS A METHOD OF TREATMENT.

54 Fed. Reg. 48,393 column 1

EPA has proposed numerous treatment standards that would require or allow incineration as a form of treatment, but would not allow fuel substitution as a form of treatment. See, e.g., 54 Fed. Reg. 48,393, 48,407, 48,417, 48,421. Moreover, EPA has proposed prohibiting the treatment of California List Halogenated Organic Compounds ("HOCs") in boilers and furnaces and instead limiting the treatment of such wastes to burning in incinerators. Id. at 48,499. These proposals are unjustified and are contrary to prior statements made by the Agency.

EPA has long recognized that burning of hazardous wastes in boilers and industrial furnaces pursuant to appropriate regulatory controls is "equally effective" in destroying and removing hazardous constituents as burning such wastes in incinerators. See 52 Fed. Reg. 17,021 (May 6, 1987). Indeed, it is for this reason that EPA originally proposed to amend the treatment standard (i.e., incineration) applicable to certain HOCs to include burning in industrial boilers and furnaces. Id. The Agency has recently proposed new permitting and interim status standards for industrial boilers and furnaces that would be as stringent or even more stringent than the corresponding requirements for incinerators. 52 Fed. Reg. 16,982 (May 6, 1987); 54 Fed. Reg. 43,718 (October 26, 1989). These standards are scheduled to be promulgated in February 1991. 54 Fed. Reg. 45,310 (October 30, 1989). Accordingly, the Agency should allow fuel substitution as a method of treatment.

Indeed, EPA should allow fuel substitution as an alternative to incineration even in advance of the new standards for industrial boilers and furnaces. EPA previously adopted this approach in the context of HOC wastes, when it allowed such wastes to be burned in boilers and furnaces before new standards for such units were promulgated. The Agency stated that it was "prepared to accept this discrepancy in timing of the boilers and furnaces rule because these devices are likely to be operated efficiently so as to achieve substantial destruction of the HOCs in the waste." 53 Fed. Reg. 31,176 (August 17, 1988). As EPA pointed out:

> This is because industrial boilers and industrial furnaces have a commercial purpose which requires relatively efficient burning (see section 260.10 definitions of "boiler" and "industrial furnace" which require, for boilers, energy recovery efficiency of 60 percent and 75 percent export and utilization of recovered energy, and, for industrial furnaces, that the device be an integral part of a manufacturing process).

Comment Number: 1-T-2 continued
Docket Number: LD12-00179
Commenter: DOW CHEMICAL
Issue: General BDAT Aspects
Subissue: Incineration/Fuel Substitution
Comment:

53 Fed. Reg. 17,605 (May 17, 1988). EPA recently reiterated its determination in a brief filed with the U.S. Court of Appeals for the District of Columbia Circuit, where it stated that "boilers and industrial furnaces will be operated efficiently even before the Agency finishes promulgating [final] regulatory controls [for such units]". Brief of Respondent United States Environmental Protection Agency in American Petroleum Institute v. EPA, No. 88-1606 (D.C. Cir. filed December 11, 1989). In addition, many boilers and industrial furnaces are permitted to burn polychlorinated biphenyl ("PCB") wastes under the Toxic Substances Control Act ("TSCA"), which requires a Destruction and Removal efficiency ("DRE") far greater than the RCRA standard of 99.99 percent (i.e., 99.9999 percent). Moreover, industrial boilers and furnaces remain subject to a wide variety of other federal, state and local standards, such as emissions limitations under the Clean Air Act. Finally, nonindustrial boilers, some of which might be expected to be less efficient than incinerators, are effectively prohibited from burning hazardous waste at all under 40 CFR Section 266.31(b).

Because industrial boilers and furnaces are likely to be operated efficiently and EPA has previously allowed such devices to receive restricted hazardous wastes, there is no reason to prohibit the continued burning of Third Third wastes in boilers and furnaces. Prohibiting the use of such devices would not significantly further any health or environmental goals. Moreover, it would cause serious disruption in the regulated community as facilities are first prohibited from burning wastes in boilers and furnaces and then, presumably, allowed to resume such practices a few months later after the final standards for industrial boilers and furnaces are promulgated. For these reasons, Dow urges EPA to allow fuel substitution in an industrial boiler or furnace as an alternative treatment technology whenever incineration is required or allowed as a method of treatment.

EPA's stated rationale for the reversal of its earlier stance on fuel substitution does not withstand scrutiny. In support of its proposal to prohibit the use of fuel substitution, EPA states that "it appears that there is sufficient incineration capacity to accommodate [certain] wastes, so that use of fuel substitution capacity is not needed to avoid granting a national capacity variance for these wastes." 54 Fed. Reg. 48,407; see also id. at 48,499. Dow finds this rationale extremely curious. EPA is, in fact, proposing national capacity variances for at least some materials for which incineration is allowed as a method of treatment. 54 Fed. Reg. 48,489. Moreover, capacity is not a relevant consideration in identifying BDAT. See, e.g., Methodology for Developing Best Demonstrated Available (BDAT) Treatment Standards, Office of Solid Waste (December, 1988), pp. 10-14. If, as demonstrated above and admitted by EPA, burning in an industrial boiler or furnace is "equally effective" as burning in an incinerator, EPA cannot properly single out burning in only one of these devices as BDAT.

Finally, under EPA's waste code carry-through principle, many wastes could be assigned a waste code that would prohibit the use of fuel substitution even though such wastes bear little or no resemblance to the pure wastes that EPA believes are "unacceptable for fuel substitution." 54 Fed. Reg. 48,407. EPA should not blindly restrict the use of fuel substitution in such a manner.

Comment Number: 1-T-2
Docket Number: LD12-00179
Commenter: Dow Chemical
Issue: General BDAT Aspects
Subissue: Incineration/Fuel Substitution
Response:

The Agency chose not to allow fuel substitution as a treatment method for wastes not amenable to quantification. Because of their inability to be analyzed in treatment residues these wastes must be carefully monitored in thermal units to ensure the best demonstrated treatment except in instances where the wastes were clearly fuel worthy, or where the extra industrial furnace capacity made the difference in granting a national capacity variance. Currently only incineration units complying with 40 CFR 264 Subpart O or 265 Subpart O allow these controls. Consequently, the Agency believes that only incineration units have been demonstrated as BDAT and disagrees with the commenter that fuel substitution should be included as a method of treatment for these wastes. Furthermore, the Agency questions the fuel value of a waste which comprises less than ten percent of the total feed stream to the combustion unit.

Comment Number: 1-T-3

Docket Number: LD12-00192

Commenter: Cemtech

Issue: General BDAT Aspects

Subissue: Incineration/Fuel Substitution

Comment:

Cemtech, Inc. is a premier supplier of recyclable materials to cement kilns, with fuels and/or raw materials going to 17 kilns in eight cement plants nation wide. Cemtech, through its Patchem subsidiary, has pioneered many beneficial uses of waste materials. The writer has over 20 years experience with cement kilns and utilization of wastes therein.

On November 22, 1989, EPA issued a proposed rule for the third third of scheduled wastes (54FR 48372 through 48529). This is a complex rule covering about 350 wastes and has a statutory requirements for promulgation of May 8, 1990. Consequently, the comment period was kept excessively short for the complexity of the proposal.

While recognizing the statutory need for speed and the desirability of restricting land disposal, we fear that excessive speed may have led to inadvertent results that go beyond reason.

Our specific concerns lie with 54FR 48392 (3) through 48393 (1) and 48407 (2 and 3) wherein many wastes are restricted from fuel substitution and to incineration (much, we are sure, to the delight of the incinerator lobby). The reasons given for such restriction, high toxicity and need to control HCl emissions, just are not relevant when these wastes are blended into a fuel for use in cement kilns (or even when not blended).

The inadvertent result occurs when this prohibition is viewed in light of the mixture and derived-from rules. Under these rules, any of the wastes restricted to incinerators appearing in any quantity in a waste mixture would cause such mixture to be restricted to incineration and, consequently, prohibited from use in cement kilns. The irony here is that EPA has acknowledged that cement kilns are inherently more efficient at and capable of waste destruction than incinerators because of higher temperatures, longer residence time, inherent neutralization and lack of a hazardous ash residue.

Comment Number: 1-T-3
Docket Number: LD12-00192
Commenter: Cemtech
Issue: General BDAT Aspects
Subissue: Incineration/Fuel Substitution
Response:

The Agency chose not to allow fuel substitution as a treatment method for wastes not amenable to quantification. Because of their inability to be analyzed in treatment residues these wastes must be carefully monitored in thermal units to ensure the best demonstrated treatment except in instances where the wastes were clearly fuel worthy, or where the extra industrial furnace capacity made the difference in granting a national capacity variance. Currently only incineration units complying with 40 CFR 264 Subpart O or 265 Subpart O allow these controls. Consequently, the Agency believes that only incineration units have been demonstrated as BDAT and disagrees with the commenter that fuel substitution should be included asa method of treatment for these wastes. Furthermore, the Agency questions the fuel value of a waste which comprises less than ten percent of the total feed stream to the combustion unit.

Comment Number: 1-T-4
Docket Number: LD12-00198
Commenter: Department of Energy
Issue: General BDAT Aspects
Subissue: Incineration / Fuel Substitution
Comment:

1) Incineration as a Specified Technology.

As a general statement, DOE considers that the use of incineration as a treatment standard expressed as a specified technology limits the options available to industry. There are other thermal devices which have been and are being developed which destroy the hazardous waste similar to an incinerator but which do not meet the definition of an incinerator in that they do not use a flame. Thermolytic detoxification and thermal pyrolysis are both equivalent to incinerators in their ability to destroy organics. Both are capable of destruction removal levels of 99.99 percent or greater. Specification of incineration will only stifle the development of better, cleaner technologies for organics. DOE requests that where incineration is determined to be the standard, that it be expanded to state "incineration or other thermal treatment that results in 99.99 percent destruction removal of the restricted organic constituents."

Comment Number: 1-T-4
Docket Number: LD12-00198
Commenter: Dpmt of Energy
Issue: General BDAT Aspects
Subissue: Incineration/Fuel Substitution
Response:

The Agency does not intend that specification of certain methods of treatment as the treatment standard stifle the development of innovative technologies. For purposes of treatment standards, however, the Agency prefers to specify methods of treatment that are subject to regulatory controls (i.e., incineration currently is subject to performance standards under Part 264 and 265, Subpart O)

One may petition the Agency to be allowed to use other methods of treatment under the provisions of 40 CFR 268.42(b). Such decisions will be made by the Agency on a case-by-case basis.

Comment Number: 1-T-5

Docket Number: LD12-00208

Commenter: Envirocare

Issue: General BDAT Aspects

Subissue: Incineration / Fuel Substitutions

Comment:

Additionally, questions such as whether "combustion of sludge/solids" is similar enough to be considered "incineration" and, therefore, inclusive in the variance are left unsatisfactorily addressed. It is suggested that the language which reads " . . . based on incineration, vitrification, or wet-air oxidation . . ." be removed. Alternatively, EPA may simply amend the tables to indicate the basis of the treatment standard.

Comment Number: 1-T-5
Docket Number: LD12-00208
Commenter: Envirocare
Issue: General BDAT Aspects
Subissue: Incineration/Fuel Substitution
Response:

The descriptions of required technologies in 40 CFR 268.42 have been modified in order to clarify what technologies are required, to specify (whenever possible) operating parameters, and to describe required treatment trains. These modifications should eliminate the commenter's concerns about compliance with today's promulgated treatment standards.

Comment Number: 1-T-6
Docket Number: LD12-00209
Commenter: Ethyl Corporation
Issue: General BDAT Aspects
Subissue: Incineration / Fuel Substitution
Comment:

Incineration Versus Fuel Substitution or Recovery

The strict limitation of incineration for certain wastes versus the fuel substitution or recovery option is a waste of valuable incineration capacity and our country's energy resources. For example, certain wastes not only provide a valuable energy source for cement kilns, but add constituents to the cement matrix to improve its quality and characteristics. The Congressional mandate for Resource Conservation and Recovery is also violated if certain wastes may be utilized in cement kilns without detriment to human health or the environment. This particularly applies to the use of multiple waste codes in defining waste streams. Adequate treatment utilizing resource recovery or fuel substitutions can occur for many mixed wastes, yet only incineration treatment may be allowed because of the presence of minor waste constituents.

Comment Number: 1-T-6
Docket Number: LD12-00209
Commenter: Ethyl Corporation
Issue: General BDAT Aspects
Subissue: Incineration/Fuel Substitution
Response:

The Agency chose not to allow fuel substitution as a treatment method for wastes not amenable to quantification. Because of their inability to be analyzed in treatment residues these wastes must be carefully monitored in thermal units to ensure the best demonstrated treatment except in instances where the wastes were clearly fuel worthy, or where the extra industrial furnace capacity made the difference in granting a national capacity variance. Currently only incineration units complying with 40 CFR 264 Subpart O or 265 Subpart O allow these controls. Consequently, the Agency believes that only incineration units have been demonstrated as BDAT and disagrees with the commenter that fuel substitution should be included asa method of treatment for these wastes. Furthermore, the Agency questions the fuel value of a waste which comprises less than ten percent of the total feed stream to the combustion unit.

Comment Number: 1-T-7
Docket Number: LD12-00214
Commenter: Browning Ferris Industries
Issue: General BDAT Aspects
Subissue: Incineration / Fuel Substitution
Comment:

IV. Thermal Destruction: The Use of Technology as a BDAT Standard

While BFI has general concerns regarding the use of technology standards, we are particularly concerned about EPA's failure to include boilers and industrial furnaces (BIFs) as alternates when incineration has been proposed as a technology standard. BFI notes that in past LDR rulemaking EPA has included BIFs in situations where incineration has been specified as a technology standard. BFI believes that this mid-course change in approach to specification of thermal destruction technologies is shortsighted and ignores a number of important policy and regulatory decisions EPA has made over the past several years. Furthermore, BFI is concerned that the Agency has made this mid-course change without articulating any kind of rationale as to why BIFs should not be included as equivalent alternatives when a technology standard based on incineration is specified.

If the Agency's reluctance to include BIFs as alternative technologies to incineration is based on the lack of regulatory controls analogous to the Part 264 Subpart O standards for hazardous waste incinerators then BFI has a number of points to make. First, many types of industrial furnaces, and cement kilns in particular, offer a high level of performance that can consistently meet or exceed the performance requirements mandated for hazardous waste incinerators. Second, cement kilns are increasingly subject to stringent emission and operating standards under State issued air permits which include trial burns to verify performance capabilities prior to being allowed to burn hazardous

Comment Number: 1-T-7 continued
Docket Number: LD12-00214
Commenter: Browning-Ferris Industries
Issue: General BDAT Aspects
Subissue: Incineration / Fuel Substitution
Comment:

waste as fuels on a routine commercial basis. Third, BFI reminds the Agency that current regulations under Subpart O Part 264 for hazardous waste incinerators do not include regulatory requirements specific to metals emissions. This fact has not led the Agency to preclude the burning of waste bearing metals in incinerators on a generic basis. Fourth, for years the Agency has not precluded the use of BIFs for hazardous wastes as long as the burning and blending regulations are complied with and the minimum 5000BTU/pound policy is respected. BFI cannot understand how certain wastes that would be subject to the proposed incinerator technology standards are suddenly no longer appropriately managed in the context of burning hazardous waste for energy recovery -- absent a specific environmental reason as to why these codes cannot be equivalently managed in BIFs or at least a subset of these device (e.g., cement kilns). Finally, BFI takes note that in many instances EPA has specified certain recycling technologies as technology standards for certain types of hazardous waste streams that are not subject to RCRA permits, or for that matter, subject to permits under other authorities that are as comprehensive as set forth under Part 264 Subpart O or as proposed for BIFs (See 54 Fed.Reg. 43718.

Comment Number: 1-T7 continued
Docket Number: LD12-00214
Commenter: Browning-Ferris Industries
Issue: General BDAT Aspects
Subissue: Incineration / Fuel Substitution
Comment:

Unless the Agency can point to specific environmental concerns regarding the burning of wastes in a BIF, that otherwise can be sent to a hazardous waste incinerator, BFI believes that whenever incineration is specified as a technology standard BIFs should also be included. Moreover, BFI believes that the Agency has ample authorities under RCRA to assure that BIFs safely burn hazardous wastes even in the absence of a final BIF rule. In the interests of assuring the timely implementation of the LDR, BFI urges the Agency not to cut off valuable thermal destruction capacity that is readily available from existing BIFs.

BFI requests the Agency to clarify the applicability of a technology standard when a hazardous waste subject to such a standard is being used as a fuel substitute in conformance with existing regulations and policy. BFI also requests that the Agency clarify this situation when the BIF is a Bevill device (such as a cement kiln). BFI believes that a waste subject to a technology standard can still be managed in a Bevill device that is conformance with the burning and blending regulations and policy.

Comment Number: 1-T-7
Docket Number: LD12-00214
Commenter: Browning Ferris Industries
Issue: General BDAT Aspects
Subissue: Incineration/Fuel Substitution
Response:

The Agency chose not to allow fuel substitution as a treatment method for wastes not amenable to quantification. Because of their inability to be analyzed in treatment residues these wastes must be carefully monitored in thermal units to ensure the best demonstrated treatment except in instances where the wastes were clearly fuel worthy, or where the extra industrial furnace capacity made the difference in granting a national capacity variance. Currently only incineration units complying with 40 CFR 264 Subpart O or 265 Subpart O allow these controls. Consequently, the Agency believes that only incineration units have been demonstrated as BDAT and disagrees with the commenter that fuel substitution should be included asa method of treatment for these wastes. Furthermore, the Agency questions the fuel value of a waste which comprises less than ten percent of the total feed stream to the combustion unit.

Comment Number: 1-T-8
Docket Number: LD12-00241
Commenter: Nortru, Inc.
Issue: General BDAT Aspects
Subissue: Incineration / Fuel Substitution
Comment:

We believe that the Agency has neglected the extensive capacity offered by fuel substitution for use by the cement kiln industry and distillation for the safe recycling of many of the waste streams (codes) covered in this proposed rulemaking package. Advanced fuel blending techniques available today can acceptably process many of these waste codes into useable fuel products which can be safely consumed within many of our nation's cement kilns and industrial furnaces. The BDAT technology currently exists within the fuel substitution methodology to obviate any proposed capacity variances or need to incinerate, and where distillation is a viable alternative for "U" and "P" wastes it should be specified as an additional BDAT.

Comment Number: 1-T'8 continued
Docket Number: LD12-00241
Commenter: Nortru, Inc.
Issue: General BDAT Aspects
Subissue: Incineration/Fuel Substitution
Comment:

In the Third Third proposed rules the Agency has neglected thermal treatment by fuel substitution as an alternative for treating many of the wastes covered by this proposal. The Agency has excluded, for instance, many "U", "P" and "K" wastes that are now amenable to, and are currently being fuel blended. Typical examples of materials which are amenable to fuel substitution are : U019, U051, U052, U055, U056, and U186. In addition U076, U077, U078, U080, U210, U226, and U228 are all distillable materials which can be beneficially recovered without the need for incineration.

The Agency states the following reasons for the exclusion of fuel substitution as acceptable thermal destruction of these wastes:

> "Due to the high concentration of specific, identified halogenated organics known or anticipate to be present in these U and P off-spec chemicals; the relatively high toxicity of some of the pesticides and miscellaneous halogenated organics; the anticipated low fuel value of these U and P wastes; and the need to control HCl emissions from the destruction of halogenated organics, the Agency does not believe that fuel substitution is a viable alternative for the majority of specific U and P waste codes identified in this section" (54 FR 48392);

Comment Number: 1-T'8 continued
Docket Number: LD12-00241
Commenter: Nortru, Inc.
Issue: General BDAT Aspects
Subissue: Incineration / Fuel Substitution
Comment:

and,

"Since many of these nonhalogenated chemicals represented by these U and P waste codes generally have reasonably high BTU value (e.g., the aromatics and polynuclear aromatics) and since U and P wastes are typically off-specification or discarded products, they might be expected to be well suited for fuel substitution purposes. However, despite this fuel value and the fact that these compounds consist primarily of hydrogen and carbon, many of these wastes may be considered unacceptable for fuel substitution due to their relatively high toxicity and acid formation capability (due incineration). In addition it appears that there is sufficient capacity to accommodate these wastes, so that the use of fuel substitution capacity is not needed to avoid granting a national capacity variance for these wastes. It also appears that only oxygenated hydrocarbons and heterocyclics (seventeen of the eighty two U and P nonhalogenated wastes) are likely candidates for fuel substitutes. The Agency does not believe that fuel substitution is a viable alternative for the majority (65) of the specific U and P waste codes identified in this section" (54 FR 48407).

Comment Number: 1-T-8 continued
Docket Number: LD12-00241
Commenter: Nortru, Inc.
Issue: Incineration / Fuel Substitution
Subissue: General BDAT Aspects
Comment:

We believe that many D002 and D004 through D011 characteristic wastes are also amenable to fuel substitution when they also exhibit a D001 characteristic.

We further believe the Agency is in error asserting that an incinerator will handle these wastes with any greater efficiency or safety than that which is provided by cement kilns. The Agency has recognized as recently as October 26, 1989 in the proposed rules entitled, "Burning of Hazardous Waste in Boilers and Industrial Furnaces: Supplement to Proposed Rule" (54 FR 43718) that:

> "It is EPA's intention to make the standards for burning hazardous waste as uniform as possible given that the potential risks posed are similar irrespective of the type of combustion device" (54 FR 43719).

Comment Number: 1-T-8 continued
Docket Number: LD12-00241
Commenter: Nortru, Inc.
Issue: General BDAT Aspects
Subissue: Incineration / Fuel Substitution
Comment:

The Agency is also proposing (54 FR 43736) to rescind the "Sham Recycling Policy" (48 FR 11157). This would allow many wastes subject to the Third Third proposed rules, both nonwastewaters and wastewaters, "F" aqueous wastes and multisource leachate with lower than 5,000 BTU per pound, to be fuel blended and effectively treated. We believe that fuel blenders and any cement kilns which have received their Part B permit are fully capable of handling these waste safely and efficiently.

We request that the Agency further review the apparent dichotomies in the following:

1) Is it now the Agency's opinion that an incinerator can handle wastes that have "high toxicity" and "acid formation capability" any more effectively than industrial furnaces or particularly cement kilns where the composition of the material and the cement manufacturing process intrinsically neutralizes many of these wastes?

Comment Number: 1-T-8 continued
Docket Number: LD12-00241
Commenter: Nortru, Inc.
Issue: General BDAT Aspects
Subissue: Incineration / Fuel Substitution
Comment:

2) Because it is the Agency's intent to equivalently regulate industrial furnaces to incinerators, will there still be a difference between incineration and fuel substitution as a means of thermal treatment as pertains to the technology based treatment standards?

3) What is the rationale for ignoring the mandate given to the Agency in RCRA Sec. 1002 which encourages energy recovery?

We would suggest that the Agency broaden the scope of those wastes that may be treated by fuel substitution to include any wastes that can currently be incinerated as these two treatment options are essentially equivalent.

Likewise, where distillation processes are capable of recovering many of the "U" wastes contained in this proposed rule, the distillation option should be included.

Comment Number: 1-T-8
Docket Number: LD12-00241
Commenter: Nortru, Inc
Issue: General BDAT Aspects
Subissue: Incineration/Fuel Substitution
Response:

The Agency chose not to allow fuel substitution as a treatment method for wastes not amenable to quantification. Because of their inability to be analyzed in treatment residues these wastes must be carefully monitored in thermal units to ensure the best demonstrated treatment except in instances where the wastes were clearly fuel worthy, or where the extra industrial furnace capacity made the difference in granting a national capacity variance. Currently only incineration units complying with 40 CFR 264 Subpart O or 265 Subpart O allow these controls. Consequently, the Agency believes that only incineration units have been demonstrated as BDAT and disagrees with the commenter that fuel substitution should be included asa method of treatment for these wastes. Furthermore, the Agency questions the fuel value of a waste which comprises less than ten percent of the total feed stream to the combustion unit.

Comment Number: 1- T-9
Docket Number: LD12-00261
Commenter: Disposal Systems Inc.
Issue: General BDAT Aspects
Subissue: Incineration/Fuel Substitution
Comment:

EQUIVALENCY IN THERMAL PROCESSES

We support the Agency in the instances where the LDR standards allow either incineration or fuel substitution, where the destruction takes place in a cement kiln or other similar device. We do, however, encourage a broader application of equivalency, especially where the HOCs are involved. The very hot, long residency, alkaline condition of the cement kilns are an efficient environment for destroying the HOCs and neutralizing the acids formed.

Comment Number: 1-T-9
Docket Number: LD12-00261
Commenter: Disposal Systems, Inc
Issue: General BDAT Aspects
Subissue: Incineration/Fuel Substitution
Response:

The Agency chose not to allow fuel substitution as a treatment method for wastes not amenable to quantification. Because of their inability to be analyzed in treatment residues these wastes must be carefully monitored in thermal units to ensure the best demonstrated treatment. Currently only incineration units complying with 40 CFR 264 Subpart O or 265 Subpart O allow these controls. Consequently, the Agency believes that only incineration units have been demonstrated as BDAT and disagrees with the commenter that fuel substitution should be included as a method of treatment for these wastes. Furthermore, the Agency questions the fuel value of a waste which comprises less than ten percent of the total feed stream to the combustion unit.

Comment Number: 1-T-10
Docket Number: LD12-00264
Commenter: Gilbraltar Chemical Resources Inc.
Issue: General BDAT Aspects
Subissue: Incineration/Fuel Substitution
Comment:

The Agency proposes to exclude the use of fuel substitution as a treatment alternative for a large number of U and P wastes as well as for some metal containing characteristic wastes. (54 FR 48393)

The Agency has reasoned that many U and P wastes are not high in Btu content and contain large amounts of undesirable constituents such as halogens and therefore are not suitable for use as waste-fuels. While it is true that the compounds represented by many P and U waste codes would not be suitable for use as waste-derived fuels, there are many wastes which contain only small amounts of P and U waste constituents. These wastes often carry the P and U waste codes because of the "mixture/derived from" rule.

Secondly, most burners of waste-derived fuels operate under state permits that limit the amount of constituents such as halogens and metals that can be present in waste-derived fuels. Relatively pure P and U waste constituents could not be burned under these state permits. Since, as the Agency points out when discussing fuel substitution for D001 wastes, there will soon be federal burner regulations, many of these constituents of concern will be regulated as stack parameters under federal permits.

Upon review of its records, Gibraltar finds that wastes with the following waste codes are currently being blended into waste derived fuels:

D002 D005 D008 D009 U055 U154(WW)

As stated earlier, almost any waste code could be assigned to an organic waste via the "mixture/derived from" rule. In addition, wastes that are characteristic due to the presence of a metal constituent can often be burned in devices such as cement kilns with no adverse environmental impacts. Gibraltar, therefore, requests that the Agency reconsider its restriction on the use of fuel substitution as an alternative to incineration.

Comment Number: 1-T-10

Docket Number: LD12-00264

Commenter: Gibraltar Chemical Resources, Inc

Issue: General BDAT Aspects

Subissue: Incineration/Fuel Substitution

Response:

The Agency chose not to allow fuel substitution as a treatment method for wastes not amenable to quantification. Because of their inability to be analyzed in treatment residues these wastes must be carefully monitored in thermal units to ensure the best demonstrated treatment except in instances where the wastes were clearly fuel worthy, or where the extra industrial furnace capacity made the difference in granting a national capacity variance. Currently only incineration units complying with 40 CFR 264 Subpart O or 265 Subpart O allow these controls. Consequently, the Agency believes that only incineration units have been demonstrated as BDAT and disagrees with the commenter that fuel substitution should be included asa method of treatment for these wastes. Furthermore, the Agency questions the fuel value of a waste which comprises less than ten percent of the total feed stream to the combustion unit.

Comment Number: 1-T-11
Docket Number: LD12-00085
Commenter: RCC
Issue: General BDAT Aspects
Subissue: Incineration / Fuel Substitution
Comment:

EPA's approach to BDAT selection has consistently ignored some environmental risks in picking the "best" technology. EPA's method has no room for air emissions, although that is one of the major pathways by which hazardous constituents can enter the environment during treatment. It is not just that these omissions could lead to environmentally counterproductive treatment choices. They have in fact led to such choices in the past. In choosing a "best" technology for metal-bearing solvents, EPA in effect analyzed the problem in two stages. First, it picked incineration because the ash gave the lowest leachate readings on the TCLP for the hazardous constituents of concern, which were all organic chemicals. Then, it compared incineration with land disposal to see whether it was more risky overall. It found that because of incineration's tendency to vaporize heavy metals, incineration and land disposal were about equally risky. EPA, however, did not regard this as enough to disqualify incineration, and so incineration remained BDAT. See 51 Fed. Reg. 40610.

The final result, if EPA's own figures are to be believed, is that EPA selected as BDAT a technology that greatly increased the expense of treatment and provided no reduction at all in risk to human health and the environment. EPA did that without even considering the choice of other technologies that might not have done quite as well on the treatment residuals tests, but that could have reduced the ultimate risks substantially.

Comment Number: 1-T-11
Docket Number: LD12-00085
Commenter: RCC
Issue: General BDAT Aspects
Subissue: Incineration/Fuel Substitution
Response:

There are several general regulatory development programs under RCRA that address treatment technology air emissions. The Agency has initiated a three-phased program under Section 3004(n) of RCRA to address air emissions from hazardous waste management units other than incinerators. The first phase addresses organic air emissions as a class from two types of emission sources. The first source category is process equipment (pumps, valves, etc) that contact hazardous waste that contain greater than 10 percent organic compounds, including such as distillation units and incinerators. The second source category is certain vents on various treatment technologies, such as air or steam strippers. These standards were proposed in the Federal Register on February 5, 1987 and are expected to be promulgated this spring.

The second phase of standards development under Section 3004(n) of RCRA addresses organic air emissions as a class from tanks, containers, and surface impoundments. Treatment technologies that occur in tanks or containers that are not controlled by the Phase I standards would be controlled by these standards. Wastes that would be prohibited from land disposal may continue to be managed in a surface impoundment as long as the treatment residuals that do not meet the applicable treatment standards are removed from the impoundment within one year of entry into the impoundment. These standards will control air emissions from the management of wastes in the surface impoundment. These standards are expected to be proposed in the Federal Register this spring.

In the third phase of the Section 3004(n) standards development, the Agency will develop additional standards for the sources addressed in the first two phases as necessary to address residual risks.

In addition to the Section 3004(n) standards, general standards to control both organic and metal emissions from the combustion of hazardous wastes in incinerators and other types of combustion devices are under various stages of development.

The issue of comparing risk assessment between treatment and land disposal is long settled. See First Third rule. EPA also has used its 3005(c)(3) omnibus authority to aggressively control metal emissions from incineration and has recently proposed permit standards for incinerators.

Comment Number: 1 - T - 12
Docket Number: LD12-00099
Commenter: McGuire Woods Battle + Boothe (Solite Corp.)
Issue: General BDAT Aspects
Subissue: Incineration / Fuel Substitution
Comment:

Environmental Benefits of Fuel Substitution

The burning of hazardous waste fuel in lightweight aggregate kilns has substantial environmental and energy conservation benefits. In order to maintain the conditions necessary to manufacture lightweight aggregate, Solite accepts only easily burnable waste. Lightweight aggregate kilns must maintain a hot, stable flame, with a high combustion efficiency that results in maximum destruction of organic constituents, in order to maintain the kiln conditions necessary to produce lightweight aggregate. Solite began burning the ignitable waste fuels that are now designated as hazardous prior to the enactment of RCRA. The purpose of such burning was not - and is not - incineration, but rather energy recovery. We burn these liquid wastes because they are an excellent fuel for our kilns, superior in terms of efficiency and cleanliness to bituminous coal, which is the next best alternative. We believe that the burning of ignitable hazardous waste as fuel benefits the environment by (1) safely and reliably destroying these wastes and (2) displacing the use of coal, a fuel which generates higher overall levels of emissions, particularly sulphur dioxide. Tests conducted at two of our facilities by EPA contractors have confirmed that the destruction and removal efficiency of lightweight aggregate kilns exceeds the 99.99 percent required of hazardous waste incinerators. In addition, our scrubber water and wastewater treatment residuals have been extensively tested and have been found not to possess hazardous characteristics or to contain significant levels of organic residues. Accordingly we feel that EPA should strive to encourage fuel substitution as an alternative to incineration whenever feasible.

Comment Number: 1-T-12
Docket Number: LD12-00099
Commenter: McGuire Woods Battle & Boothe (Solite Corp.)
Issue: General BDAT Aspects
Subissue: Incineration/Fuel Substitution
Response:

The Agency chose to allow fuel substitution as a treatment method for certain wastes not amenable to quantification namely, those wastes containing only carbon, hydrogen and oxygen on their molecular structure. These wastes are clearly suitable for use as fuels. However, the Agency believes that other wastes, especially those with halogen atoms should be carefully monitored in thermal units to ensure the best demonstrated treatment. Currently only incineration units complying with 40 CFR 264 Subpart O or 265 Subpart O allow an appropriate level of control. Consequently, the Agency believes that only incineration units have been demonstrated as BDAT and disagrees with the commenter that fuel substitution should be included asa method of treatment for these wastes. EPA expects this situation to change when it promulgates waste as fuel emission standards.

Comment Number: 1-T-13
Docket Number: LD12-00171
Commenter: Levy, Kroll + Simonds (Ash Grove Cement Co.)
Issue: General BDAT Aspects
Subissue: Incineration / Fuel Substitution
Comment:

Our fundamental concern with the November 22 proposal is that for many waste streams, EPA has specified "incineration" to the exclusion of "fuel substitution" as BDAT. EPA proposed this despite EPA's clear recognition in the November 22 proposal that wastes' energy value should be fully utilized because of a "fundamental RCRA goal of encouraging recovery of energy from wastes (RCRA section 1002(d)." 54 Fed. Reg. 48422. Before turning to the specific waste streams of concern, we will provide some general background information.

Comment Number: 1-T-13
Docket Number: LD12-00171
Commenter: Freedman, Levy, Kroll & Simonds (Ash Grove Cement)
Issue: General BDAT Aspects
Subissue: Incineration/Fuel Substitution
Response:

The Agency chose to allow fuel substitution as a treatment method for certain wastes not amenable to quantification namely, those wastes containing only carbon, hydrogen and oxygen on their molecular structure. These wastes are clearly suitable for use as fuels. However, the Agency believes that other wastes, especially those with halogen atoms should be carefully monitored in thermal units to ensure the best demonstrated treatment. Currently only incineration units complying with 40 CFR 264 Subpart O or 265 Subpart O allow an appropriate level of control. Consequently, the Agency believes that only incineration units have been demonstrated as BDAT and disagrees with the commenter that fuel substitution should be included asa method of treatment for these wastes. EPA expects this situation to change when it promulgates waste as fuel emission standards.

Comment Number: 1-T-14
Docket Number: LD12-L0007
Commenter: Chemical Manufacturers Association
Issue: General BDAT Aspects
Subissue: Incineration/Fuel Substitution
Comment:

F. EPA Has Unnecessarily Excluded Fuel Substitution as an Alternative for Most "U" and "P" Wastes.

EPA has expressed a concern that a large number of "U" and "P" wastes, e.g., halogenated wastes (54 Fed. Reg. at 48,392) and nonhalogenated wastes (id. at 48,407), if burned as fuel substitutes, will generate acid gases and result in toxic constituent emissions. In addition, the Agency is concerned that halogenated "U" and "P" wastes have low fuel content. CMA believes that these concerns are overstated. Not only are there existing regulations in the Clean Air Act which may address these emissions, but owner/operators limit the chlorine content of all fuel substitutes in accordance with good operating practices. In addition, CMA notes that EPA has already proposed relevant emission limits for burning hazardous waste in boilers and industrial furnaces.

Fuel substitution is a valuable method of managing hazardous waste. EPA's own data show that boilers and industrial furnaces burning hazardous waste routinely achieve 99.95 percent destruction/removal efficiencies. This management technique helps conserve fossil fuels. Therefore, EPA should not hesitate to adopt fuel substitution as BDAT for appropriate "P" and "U."

Comment Number: 1-T-14
Docket Number: LD12-L0007
Commenter: Chemical Manufacturers Association
Issue: General BDAT Aspects
Subissue: Incineration/Fuel Substitution
Response:

The Agency chose not to allow fuel substitution as a treatment method for wastes not amenable to quantification. Because of their inability to be analyzed in treatment residues these wastes must be carefully monitored in thermal units to ensure the best demonstrated treatment except in instances where the wastes were clearly fuel worthy, or where the extra industrial furnace capacity made the difference in granting a national capacity variance. Currently only incineration units complying with 40 CFR 264 Subpart O or 265 Subpart O allow these controls. Consequently, the Agency believes that only incineration units have been demonstrated as BDAT and disagrees with the commenter that fuel substitution should be included asa method of treatment for these wastes. Furthermore, the Agency questions the fuel value of a waste which comprises less than ten percent of the total feed stream to the combustion unit.

Comment Number: 1-U-1
Docket Number: LD12-00168
Commenter: American Petroleum Institute
Issue: General BDAT Aspects
Subissue: Transfer of Treatment Standards or Performance Data
Comment:

III. A.1.d. - Transfer of Treatment Standards

EPA notes that it would be difficult for the Agency to treat every waste, and that in some cases it has developed treatment standards for untested waste by transferring performance data from tested wastes. The exact methodology used, says EPA, varies with the individual waste.

As an abstract proposition, EPA's decision to rely on transferred data is hard to quarrel with, given the tight deadlines, the numerous decisions to be made, and the existence of the hammers.

However, the Agency should remain aware that such a procedure introduces substantial possibilities of error, and should be ready to respond quickly to specific information on untested wastes. Of particular concern is the fact that EPA is proposing Not-To-Exceed limits based on transferred data. For any untested waste, it would be totally serendipitous for standards based on transferred data to be precisely appropriate at EPA's target of a 99% confidence level. The concerns expressed in section III.A.1.f of these comments will likely be magnified for any standard based on transferred data.

Comment Number: 1-U-1
Docket Number: LD12-00168
Commenter: American Petroleum Institute
Issue: General BDAT Aspects
Subissue: Transfer of Treatment Standards or Performance Data
Response:

In some instances, EPA is proposing treatment standards that are not based on tests of the waste in question by the selected BDAT technology. The Agency may do this when it determines that the constituents present in the subject waste can be treated to the same performance levels as those observed in other wastes for which EPA has previously developed treatment data. EPA believes such transfers may be technically valid in cases where the untested wastes are generated from similar industries or from similar processing steps or have similar waste characteristics affecting performance (WCAPs) and treatment selection. Background documents discuss WCAPs, and the Agency, as a matter of policy, transfers standards from more difficult-to-treat to lee-difficult-to-treat wastes.

Transfer of treatment standards to similar wastes or to wastes from similar processing steps involves relatively minimal amount of analysis because of the likelihood that the production processes will produce a waste matrix with similar characteristics. It is based on a detailed comparison of the constituents of concern in the untested waste with those in the tested waste. If the parameters that affect treatment performance for these constituents indicate that the untreated waste is equal to or easier to treat than the tested waste, then the transfer can be made. For example, the Agency will often transfer data from wastes with higher concentrations of contaminants to those with lower concentration of contaminants.

Comment Number: 1-U-2
Docket Number: LD12-00236
Commenter: Caterpillar, Inc.
Issue: General BDAT Aspects
Subissue: Transfer of Treatment Standards or Performance Data
Comment:

Transfer of Performance Data

The Agency is proposing treatment standards for metal bearing wastes based on a transfer of performance data from other wastes containing these metals having similar waste characteristics.

In designing treatment plants at Caterpillar we have found that even though our manufacturing operations are similar at most of our plant locations, the treatment processes for the wastes generated vary substantially due to synergism and other unknown factors.

If transfer performance data is to be utilized it would be prudent to apply a safety factor to allow for these factors.

Comment Number: 1-U-2
Docket Number: LD12-00236
Commenter: Caterpillar, Inc
Issue: General BDAT Aspects
Subissue: Transfer of Treatment Standards or Performance Data
Response:

In some instances, EPA is proposing treatment standards that are not based on tests of the waste in question by the selected BDAT technology. The Agency may do this when it determines that the constituents present in the subject waste can be treated to the same performance levels as those observed in other wastes for which EPA has previously developed treatment data. EPA believes such transfers may be technically valid in cases where the untested wastes are generated from similar industries or from similar processing steps or have similar waste characteristics affecting performance (WCAPs) and treatment selection. Background documents discuss WCAPs, and the Agency, as a matter of policy, transfers standards from more difficult-to-treat to lee-difficult-to-treat wastes.

Transfer of treatment standards to similar wastes or to wastes from similar processing steps involves relatively minimal amount of analysis because of the likelihood that the production processes will produce a waste matrix with similar characteristics. It is based on a detailed comparison of the constituents of concern in the untested waste with those in the tested waste. If the parameters that affect treatment performance for these constituents indicate that the untreated waste is equal to or easier to treat than the tested waste, then the transfer can be made. For example, the Agency will often transfer data from wastes with higher concentrations of contaminants to those with lower concentration of contaminants.

Comment Number: 1-U-3
Docket Number: LD12-00240
Commenter: Amoco Corporation
Issue: General BDAT Aspects
Subissue: Transfer of Treatment Standards or Performance Data.
Comment:

Section III.A.1.d.

Amoco appreciates that EPA must set treatment standards for many wastes without adequate data, and recognizes that some standards must be based on treatment data for other wastes. However, in setting these standards, EPA must adequately compensate for its limited data base. EPA should establish a mechanism for wastes which are restricted based on data transferred from treatment of other wastes. This mechanism should be self-implementing, to avoid arduous petitioning efforts, and should allow use of alternate treatment standards when EPA-specified criteria are met.

Comment Number: -U-3
Docket Number: LI .2-00240
Commenter: Amoc Corporation
Issue: General BD T Aspects
Subissue: Transfer Treatment Standards or Performance Data
Response:

In some instances, E A is proposing treatment standards that are not based on tests of the waste in question by e selected BDAT technology. The Agency may do this when it determines that the const ients present in the subject waste can be treated to the same performance levels as tho observed in other wastes for which EPA has previously developed treatment data. PA believes such transfers may be technically valid in cases where the untested wastes a generated from similar industries or from similar processing steps or have similar waste aracteristics affecting performance (WCAPs) and treatment selection. Background doc ients discuss WCAPs, and the Agency, as a matter of policy, transfers standards from mo difficult-to-treat to lee-difficult-to-treat wastes.

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Comment Number: ~~LD~~ 1-V-1
Docket Number: LD12-00170
Commenter: BASF Corporation
Issue: General BDAT Aspects
Subissue: Definition of K112
Comment:

This correspondence is to point out a probable error in the above referenced proposed regulations which implement the 1984 HSWA land disposal restriction provisions as they apply to K112 listed wastewater. K112 wastewater is stoichiometrically created as a by-product of the chemical reaction which occurs in the production of toluenediamine (TDA) which is a required precursor for the production process making toluenediisocyanate (TDI). The definition of K112 waste in federal regulation is found in Section 261.32 which states "K112....Reaction by-product water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene".

At the BASF Geismar Louisiana Production Facility K112 wastewater is produced in the TDI production plant. At the plant facility the wastewater is treated in a totally enclosed activated carbon treatment system for trace organic removal prior to direct discharge through an NPDES permitted outfall. The outfall is some distance from the carbon system and the treated wastewater is transferred to that point via pipeline after treatment.

The regulations referenced above propose to add Section 268.35 which states that "effective May 8, 1990" K112 listed wastes along with other last third hazardous wastes "are prohibited from land disposal" (see p. 48510 of the referenced proposed regulation). This was an expected and appropriate inclusion in the regulation. However, the remaining proposed regulation fails to include either a Best Demonstrated Available Technology (BDAT) for K112 listed wastes or a corresponding treatment standard. This is of great concern to BASF since the lack of such BDAT inclusion would prohibit the waste from land disposal without condition or option for alternative treatment and disposal of associated residues. Please note that BASF does not believe that further treatment in excess of activated carbon treatment is necessary in this case.

Comment Number: 1-V-1 continued
Docket Number: LD12-00170
Commenter: BASF Corporation
Issue: General BDAT Aspects
Subissue: Definition of K112
Comment:

The BASF concern centers on possible pipeline or other equipment leaks leading to the generation of a K112 listed hazardous waste solid which would not be amenable to discharge through a NPDES outfall as normally occurs with the K112 wastewater. In fact, the first such incident of this occurred due to a frozen pipeline valve related failure which occurred this month when Louisiana experienced the coldest temperatures ever recorded. A small amount of K112 wastewater was lost to a soil surface causing the affected soil to assume the K112 listing as well. BASF will directly land dispose the affected soil since the water spilled on it contained only trace concentrations (i.e. low ppb) of associated hazardous constituents. The follow-up letter submitted to the Louisiana Department of Environmental Quality summarizing the spill is attached for your review.

The above concern was reviewed with an employee of the RCRA Hotline Service who identified himself as Wally on the afternoon of Friday, December 29, 1989. After reviewing the proposed rule, I was told that the omission of BDAT consideration was most likely a typographical error and that he would review the BASF concerns to an appropriate party for consideration. The prompt attention to this matter by your office was noted and is certainly appreciated.

Please note that these comments are being submitted prior to the January 8, 1990 deadline for submission of such as specified in the proposed rules.

Comment Number: 1-V-1
Docket Number: LD12-00170
Commenter: BASF Corp.
Issue: General BDAT Aspects
Subissue: Definition of K112
Response:

The waste code K112 was inadvertently included in the regulatory language of the proposed Third Third rule. This is a "newly listed" waste for which there is no statutory hammer date. The Agency did not propose, nor is it promulgating, treatment standards for K112 in the Third Third rulemakings. This waste will be addressed in the future when treatment standards for all newly listed wastes will be developed.

Comment Number: 1-W-1
Docket Number: LD12-00179
Commenter: Dow Chemical
Issue: General BDAT Aspects
Subissue: Treatment Standards for P and U wastes
Comment:

XIV. TREATMENT TRAIN TECHNOLOGY STANDARDS FOR P AND U LISTED WASTES SHOULD HAVE CARBON ADSORBTION AS AN ALTERNATIVE, NOT REQUIRED, METHOD.

54 Fed. Reg. 48,394 column 1

EPA should retain carbon adsorbtion as an ALTERNATIVE treatment method for halogenated organics, but should not require the use of carbon adsorbtion as part of a treatment train.

EPA states that carbon adsorbtion is specified as part of the treatment train for halogenated organics, because such compounds (or any organics) are believed to be adsorbable when present in low concentrations as might be expected to be present in effluents from specified technologies. This is an inappropriate application of BDAT, because any one of these technologies, alone, if properly designed and operated, is representative of BDAT. While it is true that low levels of organics are adsorbable onto carbon, these treatment trains are unnecessary in property designed and operated systems and are not in place at most treatment facilities. These treatment trains cannot be constructed and operating prior to the promulgation of the Third Third. Further, construction of an additional treatment unit to remove a de minimis additional amount of waste constituents is not cost effective. It is likely that the original treatment unit will remove in excess of 95 percent of the waste constituents (98 percent in the case of Dow's biological treatment plant discussed earlier). Addition of an another unit can therefore remove a maximum of only 5 percent of the original constituents at possibly twice the total cost or in excess of 20 times the cost per pound (in the case of Dow's facility, possibly 50 times the cost per pound).

Also, review of concentration based treatment standards previously established reveals that EPA has established standards based on biological treatment alone, without carbon adsorbtion, (Parathion, P089 as an example) or chemical oxidation alone (K099 as an example). This further supports Dow's belief that a well designed and operated treatment unit, operated singularly, can be regarded as BDAT, and in fact should be included as a technology standard without requiring additional treatment utilizing carbon adsorbtion.

Comment Number: 1-W-1
Docket Number: LD12-00179
Commenter: Dow Chemical
Issue: General BDAT Aspects
Subissue: Treatment Standards for P & U Wastes
Response:

The Agency believes that the requirement to use carbon adsorption as a specified part of certain treatment trains is BDAT and ,as such, in certain cases, such treatment trains, have been set as the treatment standard. If it is not part of the treatment standard, the treater is not precluded from its use (or the use of biological treatment for that matter.)

Comment Number: 1-W-2
Docket Number: LD12-00189
Commenter: Dupont
Issue: General BDAT Aspects
Subissue: Treatm. standards for P and U wastes
Comment:

P AND U WASTES - MISCELLANEOUS COMMENT

Du Pont is concerned as to how the Agency interprets the BDAT requirements applicable to certain incineration facilities that must replace the incinerator's "fire brick" when such facilities have incinerated certain P and U wastes. Obviously, we are concerned with the potential application of the so-called "derived-from" rule. For example, we have incinerated P120 (vanadium pentoxide) wastes, for which the proposed BDAT is "Thermal Recovery or Stabilization as a Method of Treatment." By application of EPA's "derived from" rule, the firebrick would have to undergo thermal recovery for the metals or stabilization prior to land disposal. Our experience is that stabilization of the firebrick is very difficult and, for all practical purposes, unavailable to our facility through the only contractor (GSX) willing to accept this waste material. We generate nearly 40 cubic years of this material whenever the refactory brick must be replaced. Also, during normal operations, a 20 cubic yard ash collection unit may contain up to 10% firebrick. We encourage the Agency to exempt such incinerator refractory materials from the application of the proposed BDAT standards.

Comment Number: 1-W-2
Docket Number: LD12-00189
Commenter: Dupont
Issue: General BDAT Aspects
Subissue: Treatment Standards for P & U Wastes
Response:

Inorganics such as slags, glass, concrete, bricks, and other inorganic solid debris have been defined by the Agency as the "nonfriable inorganic solids" treatability group. These as the inorganic solids that are incapable of passing through a 9.5 mm standard sieve that require crushing, grinding, or cutting in mechanical sizing equipment prior to stabilization, limited to the following inorganic or metal materials: 1) metal slags, 2) glassified slag, 3) glass, 4) concrete (excluding cementitious or pozzolanic stabilized hazardous wastes), 5) masonry and refractory bricks, 6) metal cans, containers, drums, or tanks; 7) metal nuts, bolts, pipes, pumps, valves, appliances, or industrial equipment, and 8) "scrap metal" according to 40 CFR 261.1(c)(6). For this treatability group, the Agency has determined a two year national capacity variance and the standards for D004 through D011 wastes do not apply to "inorganic solids debris".

Comment Number: 1-X-1
Docket Number: LD12-00089
Commenter: Mill Service, Inc.
Issue: General BDAT Aspects
Subissue: Treatment Technologies for Metals.
Comment:

Metal Wastes

Co-disposal - In several instances, EPA has requested comment on whether it should require segregation of treatment residuals at the point of disposal for certain metal wastes as part of the treatment standard for those wastes. This is apparently of concern since certain metals may become more soluble at the higher pH conditions required to immobilize other metals. We do not believe that segregation of metal wastes for disposal is necessary to offset the potential increase in leachability of certain metals when exposed to co-disposal conditions. It is our experience that few wastes contain only a single metallic component. Thus, in order to achieve the most effective reduction in toxicity and mobility of the waste constituents, the pH of the treated waste must be compromised, generally toward a higher pH condition. Further, even if this results in somewhat higher constituent levels for certain metals in the leachate generated from the disposal unit, those leachates are subject to additional management practices prior to release to the environment.

Comment Number: 1-X-1
Docket Number: LD12-00089
Commenter: Mill Service, Inc.
Issue: General BDAT Aspects
Subissue: Treatment Technologies for Metals
Response:

EPA agrees with the commenter that segregation of treatment residues with different metals is impractical, since most untreated metal-containing wastes are mixtures of several metals. Hence, EPA is not attempting to require any such segregation in these final rule.

Comment Number: 1-X-2
Docket Number: LD12-00109
Commenter: Freeze Technologies Corporation
Issue: General BDAT Aspects
Subissue: Treatment Technologies for Metals
Comment:

Freeze Technologies is a small business which has been developing an innovative technology suitable for the treatment of hazardous wastewaters. The process we are developing is a freeze crystallization process which converts about 90% of the incoming wastewater into a high-purity water and concentrates over 99.9% of the wastewater's hazardous constituents into 10% of the original volume. The concentrated wastewater stream is discharged for further processing by incineration or other suitable technology. The high-purity water discharged from the freeze process is suitable for reuse or disposal.

This process can be used for wastes that fit both in the wastewater and non-wastewater categories set for many of the listed and characteristic wastes regulated under RCRA. Our response is directed at concern about the impact of the Land Ban Regulations on the markets for our technology, specifically as it relates to characteristic wastes for which specific treatment is specified as BDAT.

In reviewing the proposed rule for the the third segment of the Land Ban we conclude that it would impose serious barriers to the timely use of the technology we are developing, and that it will have the same impact on other new technologies as well. We doubt that is the intent of the Agency, as it is contrary to the stated intent of Congress in all recent environmental legislation.

Development and commercialization of new technology is a very difficult and expensive undertaking for any company. It is extemely important that new regulations, designed to protect and clean-up the environment, are carefully drafted so as to facilitate the adoption of new and improved methods of treatment as they are developed. We believe that the designation of specific treatment methods as BDAT is a **significant impediment to the development of new, innovative alternative treatment technologies**. Our comments are addressed specifically to the wastewater form of the various listed and characteristic wastes. They may be equally valid for some of the 'non-wastewaters', especially to the extent that the waste contains significant amounts of water that must be removed for more efficient and cost-effective disposal.

Comment Number: 1-x-2 continued
Docket Number: LD12-00109
Commenter: Freeze Technologies Corporation
Issue: General BDAT Aspects
Subissue: Treatment Technologies for Metals
Comment:

This problem of imposing institutional barriers to new technology development is especially evident in the proposed handling of characteristic wastes. Under the proposed land ban regulations, the characteristic waste would be treated by a specific technology, not only to remove the offending characteristic, but also to meet all of the more stringent treatment standards of the other characteristics as well.

Where specific processes are specified as BDAT, more effective, efficient and less expensive treatment technologies that might be developed in the future have a very significant barrier to overcome. In these cases, were EPA to specify a level of treatment to be achieved, a new technology could gain acceptance by a demonstration of its ability to meet these treatment levels. [The burden of action is on the developer of the technology, and thus to a large extent his ability to control the costs and schedule of acceptance.] However, when a specific BDAT technology is proposed, the developer must prove the technical capability of the alternative process, and then must wait upon the EPA to agree to change the BDAT technology specification so that the new process can even be considered by the regulated community. This action by the EPA has proven very difficult to obtain, as proven by the efforts of the solvent extraction developers in the case of K048-K052 wastes.

The problem is somewhat decreased when the non-process specific "recovery as a method of treatment" is specified. Still, it is not an approach that guarantees incentives to develop new treatment or recovery technologies, as the following two examples, using freezing as a recovery process, illustrate. The problem lies in the requirement to treat residuals by the specified process. In the case of freezing, the main residual is the water removed. When removed from category D002 Corrosives (acids and bases) there is little residual acidity/alkalinity, and the neutralization treatment specified for residuals is inexpensive. In the case of D001 Ignitables, however, the high purity water removed by freezing - that will meet the requirements of any of the charactertistic waste quality standards - under the new rules must still be incinerated. It is the cost of incinerating the water in the first place that provides the economic incentive to use freezing to treat that water.

This illustrates that even though freeze crystallization might produce a cleaner effluent, or might provide an equal degree of treatment at a less cost, it can be effectively blocked by these regulations. We have no doubt that other innovative processes in development or that might be conceived in the future, will face the same barrier. In the case of incineration, water has a large impact on the thermal load that effectively cuts it's capacity. In this time of variances due to insufficient incineration capacity it seems that every effort should be made to encourage treatment that enhances incineration capacity.

Comment Number: 1-X-2
Docket Number: LD12-00109
Commenter: Freeze Technologies Corp.
Issue: General BDAT Aspects
Subissue: Treatment Technologies for Metals
Response:

When EPA requires the use of a technology (or technologies), a generator or treater may demonstrate that an alternative treatment method can achieve the equivalent level of performance as that of the specified treatment method. This demonstration is typically both waste-specific and site-specific and may be based on 1) the development of a concentration-based standard that utilizes a surrogate or indicator component that guarantees effective treatment of the hazardous constituents; 2) the development of a new analytical method for quantifying the hazardous constituents; and 3) other demonstrations of equivalence for an alternative method of treatment based on a statistical comparison of technologies, including a comparison of specific design and operating parameters.

Comment Number: 1-X-3
Docket Number: LD12-00215
Commenter: AVX Corporation
Issue: General BDAT Aspects
Subissue: Treatment Technologies for Metals
Comment:

The AVX Corporation believes that more than one precipitating reagent for an individual metal must be allowed in any pretreatment standard for metals in wastewaters for the following reasons:

I. Non-routine waste treatment system process control is jeopardized without flexibility in finding varied chemical solutions to transient problems. Plant shutdowns, startups, interruptions due to equipment breakdown, repairs or maintenance and process upsets or changes are examples of non-routine conditions that occur in all systems. The proposed one-precipitant per metal pretreatment standard restricts a plant's technical ability to troubleshoot such common situations.

II. A one-reagent per metal pretreatment standard rules out many excellent chemical treatment methodologies that are capable of effectively removing multiple metals from a waste stream containing a wide range of metal concentrations.

III. A multi-metal waste stream requiring more than one treatment train may be difficult to flocculate due to interference from upstream precipitation reagents. For example, the precipitation of barium (D005) from wastewaters with sulfate in a first stage will impact lead (D008) removal in a second stage. Sulfate interferes with lead flocculation and settleability.

IV. Adding second and third treatment stages for a multi-metal waste stream in which each metal must be treated with a specific precipitation reagent involves more chemicals and equipment. This course can be counter-productive in meeting municipal discharge standards. Additional process complexity increases the opportunity for human error and equipment malfunction to compromise performance in terms of water quality.

V. The proposed restriction on pretreatment chemicals does not include provisions for reagent shortages in the marketplace.

In summary, the proposed restriction on pretreatment chemicals for individual metals will hinder effective waste treatment operation. As a direct consequence, waste water purity will be affected. The proposal is only feasible for a single-metal wastewater stream. However, multi-metal streams which are complex mixtures of particulate and dissolved metals and organics are commonly generated by a single operation in the ceramics industry. The chemical treatment technology needed to process such streams requires flexibility and a wide spectrum of precipitating and other reagents.

Comment Number: 1-X-3
Docket Number: LD12-00215
Commenter: AVX Corp.
Issue: General BDAT Aspects
Subissue: Treatment Technologies for Metals
Response:

The Agency realizes the complexities of various "D" metal wastes and for that reason has not specified specific precipitation reagents. Treaters and generators are free to use any choice of precipitating agents to comply with the numerical treatment standards.

Comment Number: 1-Y-1
Docket Number: LD12-00085
Commenter: RCC
Issue: General BDAT Aspects
Subissue: statistical Analysis
Comment:

RCC's concern in any new BDAT standard setting effort is that EPA's statistical method used to establish a 99% confidence limit for a data set unfairly exaggerates the variance in the data, and thus any proposed treatment standard based on the log-transform method utilized by EPA substantially exceeds the treatment residuals which are achievable as indicated by the currently available data.

A sufficiently large sample size as is now available indicates that treatment residual data is normally distributed. Therefore, such data can be utilized in a conventional statistical distribution method to establish realistic treatment standards at a 99% confidence level. Such a procedure avoids exaggeration of treatment standards far above the residual concentrations as shown by the currently available data.

RCC believes that once EPA has fully evaluated the between-refinery and within-refinery variability of petroleum refining wastes, and has accounted for the effects of such variability upon treatment residual compositions, BDAT standards can be adopted which can be consistently and reliably achieved by solvent extraction. Such standards will a) be fully protective of human health and the environment, b) further the resource recovery and energy conservation objectives of RCRA [Section 1003(a)] and, c) by eliminating the air emissions of incineration, further RCRA's objective of promoting the demonstration, construction, and application of solid waste management, resource recovery, and resource conservation systems which preserve and enhance the quality of air... [Section 1003(a)(10)].

Comment Number: 1-Y-1
Docket Number: LD12-00085
Commenter: RCC
Issue: General BDAT Aspects
Subissue: Statistical Analysis
Response:

For a detailed response to this comment See the Background Document for K048-K052.

Comment Number: 1-Y-2
Docket Number: LD12-00085
Commenter: RCC
Issue: General BDAT Aspects
Subissue: Statistical Analysis
Comment:

Based on the above identified data, RCC has prepared Table VIII, which indicates a suggested set of composite BDAT treatment standards for constituents of concern. The suggested BDAT treatment standards are slightly lower than those presently promulgated in the case of benzene and ethylbenzene, and somewhat higher for the other volatile and semi-volatile compounds.

In addition to the suggested treatment standards shown in Table VIII, RCC has noted that if certain of Plant M and Exxon data are removed from the tabulation (where observed residuals are extremely high) that suggested treatment standards for total xylenes and naphthalene would be 8.8 ppm and 44.5 ppm respectively.

The suggested standards are based upon a minimum of 28 data points, and a maximum of 60 data points. The mean concentration of each constituent is reported, as well as the standard deviation.

Unlike EPA's log-normal distribution scheme, RCC has utilized a more conventional distribution factor to describe the dispersion of data points about the mean. RCC has chosen Gosset's (pseudonym "Student") distribution to describe the dispersion of data about the mean. Therefore, a "variability factor" (to use EPA's term) "t" is determined from a statistical table for a 99% confidence limit. The "t" factor for each constituent is identified in the Table VIII.

RCC believes that this statistical approach is sound, especially since the data currently available does not represent an exponential distribution. Rather, it more closely represents a normal distribution. It is clear that EPA's statistical method, admittedly chosen before any data was available, does not adequately represent the distribution of available data. While EPA's assumption has minimal impact when concentrations are nearly constant, where, as here, even moderate variability occurs, the BDAT standard would be set at too high a level. In essence, where significant variance occurs, under EPA's method, the BDAT standard which results is abnormally high.

Under a conventional statistical analysis, and in this case, real world data analysis approach, BDAT standards can be set which can be consistently achieved by solvent extraction.

Comment Number: 1-Y-2 (cont.)
Docket Number: LD12-00085
Commenter: RCC
Issue: General BDAT Aspects
Subissue: Statistical Analysis
Comment:

Table VIII

TOTAL SOLVENT EXTRACTION DATA SUMMARY USING VICKSBURG, CFR, API, EXXON[1], and RCC DATA

	N	$\bar{x}$	$\sigma_{(n-1)}$	t	99% Confidence Limit
VOLATILES					
Benzene	41.	1.33	2.33	2.42	7.0
Ethylbenzene	41.	5.50	14.3	2.42	40.2
Toluene	43.	6.11	23.1	2.42	61.9
Xylene (total)	46.	49.4	134.	2.42	373.
SEMIVOLATILES					
Anthracene	53.	5.88	5.52	2.40	19.1
Benzo(a)anthracene	46.	3.03	2.83	2.41	9.86
Benzo(a)pyrene	49.	2.32	2.46	2.41	8.27
Bis(2-ethylhexyl)phthalate	28.	8.18	16.5	2.47	48.9
Chrysene	51.	3.06	4.71	2.41	14.4
m & p-Cresol	32.	3.26	5.07	2.46	15.7
o-Cresol	28.	3.11	5.10	2.47	15.7
Di-n-butyl phthalate	29.	3.01	5.04	2.46	15.4
Naphthalene	55.	35.1	65.2	2.40	191
Phenanthrene	60.	10.7	14.5	2.39	45.3
Phenol	32.	3.14	4.70	2.46	14.7
Pyrene	58.	4.40	4.69	2.39	15.6

[1] Duplicate data between API & Exxon was only used once

N = Number of data points
$\bar{x}$ = Average
σ = Standard deviation
t = Student's distribution factor

Comment Number: 1-Y-2
Docket Number: LD12-00085
Commenter: RCC
Issue: General BDAT Aspects
Subissue: Statistical Analysis
Response:

For determining treatment standards, the Agency has established a methodology for selecting particular facilities and treatment systems that it considers to be well-designed and well-operated. The Agency also selects wastes that are representative of those most difficult to treat.

The Agency recognizes that there is variability inherent in every treatment system, as well as variability in the characteristics of the wastes. The Agency accounts for these by multiplying the mean of the constituent concentrations by a correction factor known as the variability factor. This factor is derived through a quantitative procedure that determines the statistical 99th percentile for the treatment standard. This establishes a treatment standard that should be achievable 99 percent of the time by a well-designed, well-operated system. The Agency further adjusts the treatment standard to account for variabilities due to analytical recovery. In addition, all analyses of hazardous constituents are performed in accordance with an established QA/QC plan as outlined in the BDAT Generic Quality Assurance Plan. For detailed information on the statistics applied see Final K048-K052 Background Document.

Comment Number: 1-4-9
Docket Number: LD12-00168
Commenter: American Petroleum Institute
Issue: General BDAT Aspects
Subissue: Statistical Analysis
Comment:

API supports EPA's efforts to analyze the best available treatment data on the K048 to K052 wastes. As discussed in our petition of October 20, 1989, API believes that the standards set for the petroleum refining wastes in the first third land disposal restrictions did not adequately consider the variability of constituents present in the waste at the facility from which the sample was taken nor did it consider the variability of constituents present in refining wastes across the industry.

Comment Number: 1-Y-3
Docket Number: LD12-00168
Commenter: American Petroleum Institute
Issue: General BDAT Aspects
Subissue: Statistical Analysis
Response:

The Agency acknowledges the commenter's support. For a detailed response to this comment See the Background Document for K048-K052.